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Stray Notes on Kābuli Persian

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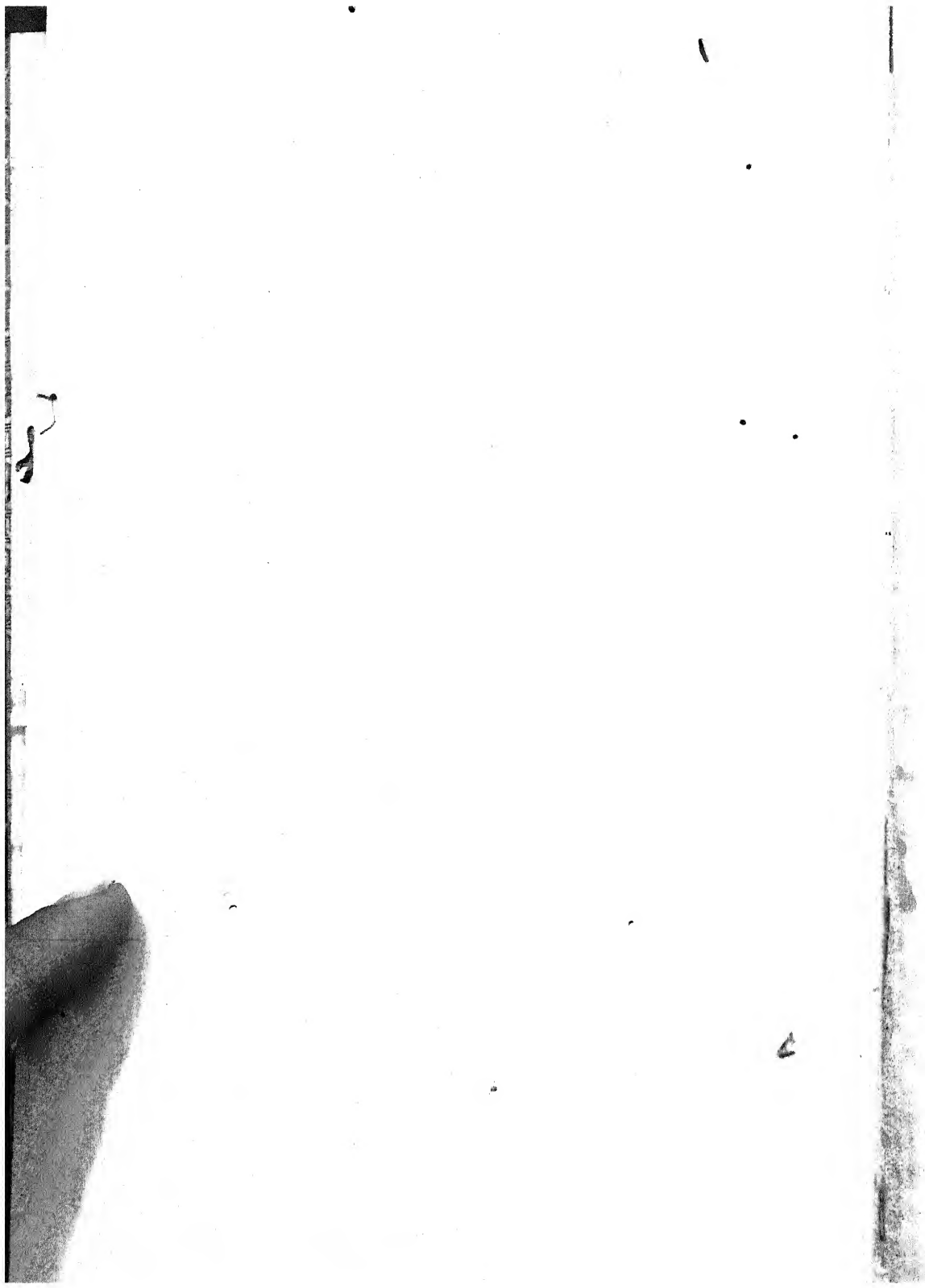
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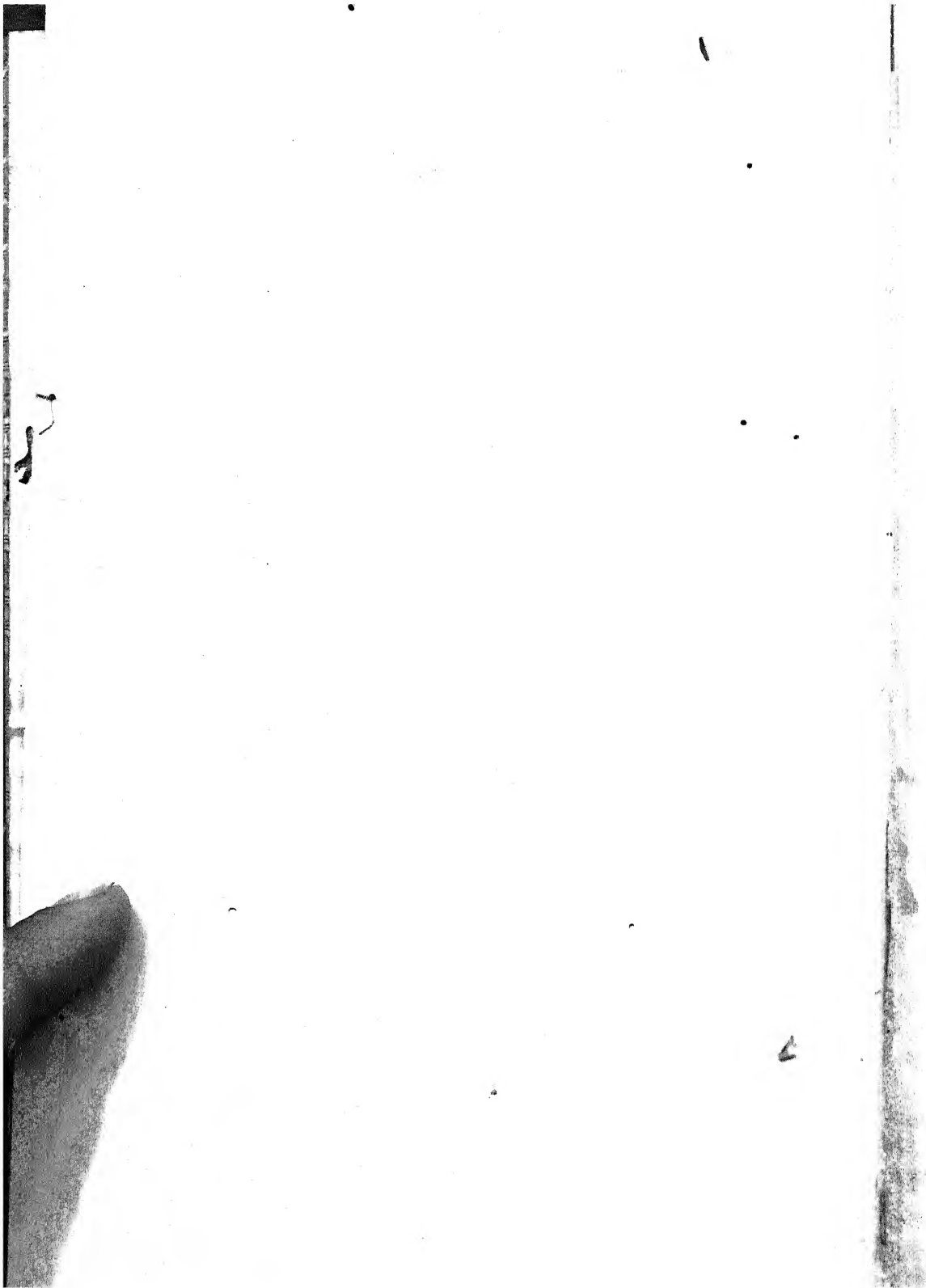
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The term "Kābuli" adopted by me for the purposes of the present sketch was first introduced, as far as I can see, by Maj. Lorimer, who explains it as "the language of the Afghān court".² It is, however, rather to Dr. G. Morgenstierne that I am indebted for that term, which he always used in conversation to denote the local language, when I met him in Kabul, but who gave preference to the more cumbrous expression "Persian of Afghanistan" in the title of his above-mentioned "Texts". That definition, if we do not take it too precisely, covers the term Kābuli as used by me in the present sketch to denote the colloquial Persian of Afghanistan, meaning under colloquial the language in its entirety: Kābuli Persian has in fact no literature of its own, and the publications of the government (newspapers, monthlies, *Nizām-nāma's*)³, as well as the official letters in all departments, are composed in the same or almost the same language as is used in ordinary speech. That particular state of things gives me the possibility of dealing with these three different aspects of Kābuli Persian as one whole and of applying to it the term "colloquial" in the wider sense of the word. In what follows the words and sentences encountered in printed publications have been accordingly marked: A A. (= A m ā n - i A f g h ā n)⁴ to denote newspapers in general (not necessarily always the newspaper of that name, although most of the examples bearing that mark are derived from that source); M A. (= M a j m ū ' a - i ' A s k a r i y y a)⁵ for monthlies in general (most of the examples belonging, however, to the afore-named Afghan military organ); N N. (= N i z ā m - n ā m a)⁶ for the law-books published by the last Afghan government (or similar publications). Words and sentences culled from the Afghan official correspondence have been marked in the present sketch O L. (= official letter). The

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⁵ *Ibid.* p. 143 foll. (p. 18 foll. sep. reprint).—

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words and sentences derived from oral intercourse are not specially marked. The presence or the absence of the above marks do in no way imply that the word or sentence thus marked does not occur in all the other categories. Quite on the contrary, the words selected for the purposes of the present sketch are, with a few exceptions, on the average such as are used or could be used in all the three categories, that is the spoken, the written and the printed language. At any rate all the words given in our sketch are used in the spoken language and the above-detailed marks are only intended to indicate the immediate source from which they have been derived.

The alphabet used in writing in Kābulī Persian is the ordinary Persian alphabet as used in Persia itself. One letter, however, or rather sign, which does not exist in standard Persian is sometimes used in Kābulī in connection with foreign names and foreign words felt as such. The sign in question is the ط, a letter borrowed from Hindustani, and the names (for the most part European) and words in which it occurs have probably been taken integrally from some Urdū book or newspaper. We may quote as an example of words felt as foreign the word *wālt-sākit* written والٹ ساکت, 'a corruption of the English term "wall-socket," in which "wall" was confused with "volts" by the Afghan (or Indian) electricians. That kind of spelling is, however, met with also in quite ordinary words like چیت (چیت) "chintz," etc.

The Spelling

The Kābulī orthography does not present any particular deviations from the rules adopted in standard Persian. The existing peculiarities concern mostly the final ی (*yā*) (whether *izāfat*, *vahdat*, *nisbat* or of any other kind) and certain names of countries, in which a regular spelling seems not to have had time to become definitely established.

(1) Very often the final ی of a word is supplied in K. with two dots, which is not customary in P., but is often met with in older literary documents.

(2) The final *yā* (to whatever category it may belong) is spelt after a mute *hā-yi havvaz*, with an *alif*. Thus—

yā-yi vahdat: K. یک کلمه ای (AA.)=P. کلمه‌ئی "a word"

هفتة ای یک مراتبه (AA.) "once a week";

yā-yi ishārat: K. بدرجه ای بود که (AA.) "it was to such a degree that...;"

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yā-yi izāfat (expressed in P. by a mere *ham'a*):
خانه ای فوقانی (OL.) "the upper room".

(3) The general rule in P. with regard to an unaccentuated *yā* when preceding the 3rd pers. sing. Pres. tense of the *verbum substantivum* is that the *yā* in question changes its place and becomes a graphically integral part of that verbal form. That rule is not observed in K.:

K. جرأها ای ست (NN.)=P. جرأها ایست "there are punishments".

(4) Some purely colloquial forms are spelt as they are pronounced in current speech:

K. متعهد استند (AA.)=P. متعهد هستند "they are agreed [upon something]";

K. بدوشان (AA.)=P. بایشان "to them";

(5) Names of countries are encountered in different spellings, often on the same page of a newspaper or a letter:

K. المانیة - المانیا - المان =P. المان "Germany"; (although more often جرمنی q. v.);

K. ترکیه - تورکیه =P. عثمانی "Turkey";

K. ایتالی - ایتالیه - ایتالی =P. ایتالیه "Italy";

K. برطانیة - برطانیا =P. انگلیس "[Great] Britain".

Certain of these double spellings - *yā* < - *ya* (یا < یه) are no doubt based on the peculiar pronunciation of the final short-*a* in K. (see below), as also the very often occurring

(6) به instead of با "with":

K. به کمال میل OL.=P. با کمال میل "with great pleasure".¹

Pronunciation

The K. pronunciation strikes one accustomed to P. as somewhat harsh. This is due to a more open than in P. pronunciation of the different shades of the phoneme *a*. In P. the shading of that vowel depends on the quality of the consonants entering into the same syllable and is sometimes regulated

¹ I find one instance of such confusion in 'Abdul-Karīm's History of Central Asia edited by Ch. Schefer with a French translation (Histoire de l'Asie Centrale etc. par Mir Abdoul Kerim Boukhary, publiée, traduite et annotée par Charles Schefer. Paris, Ernest Leroux,

1876) text p. 58 l. 18-19: خود را بهوالی مرو رسانید بچهار هزار سوار در جای عمیق پنهان شدند. Schefer's translation (p. 133) does not convey any adequate idea of the construction of the Persian text of this passage.

(towards a certain softening rather than otherwise) even by the quality of a preceding syllable, showing a kind of synharmonizing tendency. As a rule, the short *a* in P. might be considered as a sound very near the *a*-sound in the E. word "ba d", or the F. *è*. When, however, that vowel is combined in a syllable with one of the nine hard consonants ق غ م ط ظ ض ص خ ح, it sounds like the open *a* in F.: حرب *ḥarb*; خر *xar*; صبر *ṣabr*; ضرب *ṣarb*; طرف *ṭaraf*; ظرف *ẓarf*; عرب *ʿarab*; غريب *ḡarīb*; فرق *farq*. Normally it is one degree softer. The presence of the consonant ي in a syllable softens the phoneme *a* one degree more, bringing it thus down to a sound very much akin to the F. *é* (*é fermé*): مي *méy*; يك *yék*, unless its action is counterbalanced by the presence of one of the above enumerated hard consonants, which have always the upperhand in such cases. Thus:

حي *hayy* not *héyy*; يخ *yax* not *yéx*; and so forth.

Last but not least, the final *a* (expressed through a mute *hā-yi havvaz*), besides having a sound the quality of which is regulated by the above rules is also influenced in P. by the quality of the preceding syllable which, if soft, tends to soften the final syllable as well. Thus: ميوه *mīvē*; سينه *sīnē*, etc. Generally speaking, however, that final *a*-sound never becomes more open than the *a* in E. "ba d".

We have thus in P. three more or less distinct shadings of the phoneme *a* (short): *a*₁ (open *a* like the *a* in F.), *a*₂ (like *a* in E. "ba d") and *a*₃ (like the F. *é*) for initial and medial syllables, and *a*₂—*a*₃ for the final syllable in a word.—

K., however, does not possess *a*₃ at all, the place of which in initial and medial syllables is taken by *a*₂ and in the final syllable by a shading of *a* altogether foreign to P.¹ which we shall call here, for clearness' sake, *a*₀, meaning by it that the quality of it is one degree more open, than *a*₁. That sound is so near the sound of the long *ā*, that it is sometimes difficult to decide, whether the word ought to be written with an *alif* (ا ...) or a *hā-yi havvaz* (ه ...) at the end. That state of things is best illustrated by the different spellings of the same words as recorded above in our §§ 5 and 6 in the chapter on "spelling". Thus:

K. *māwā* (ميوه) = P. *māvē* (ميوه).

K. *lawba* (لويه) = P. *lawbē* (لويه), and so forth.

¹ I am inclined to think that different currents must have been at play to develop this sound in K., in the first instance probably the influence of T. on a soil already prepared by the existence of a similar *a* sound in Pét., and the final consolidation of that sound might have been due to the influence of H. and partly to an absence of any direct influence on the part of P.

The long \bar{a} in K. is the same as in P. That is to say, it is an open \bar{a} pronounced with the lips held in the shape necessary for pronouncing o . That sound, however, has in individual cases in K. the same tendency as in Western Persia towards becoming a long \bar{o} , without, however, ever lapsing altogether into that sound.¹

A sound peculiar to K. is the $y\bar{a}-yi$ *majhul* non-existent in P.² It is a sound very near the F. \acute{e} fermé (\acute{e} accent aigu) and is generally expressed in transcription by \bar{e} . Sundry A. words containing the diphthong ay are also sometimes pronounced in K. with an \bar{e} sound. I am able to quote only one example of this viz. $x\bar{e}l$ (A. خيل) q. v., but there are certainly a few more such words in K.³

On the other hand, the $y\bar{a}-yi$ *majhul* in words of purely Iranian origin seems to begin to be partly discarded (probably under the ever-increasing influence of P.) or to get resolved into the congeneric diphthong. Thus along with *ser* for "tiger" one often hears *šir* (more particularly in names, like *Šir-Ahmad*, etc.), while such words, as *umayd* "hope", *sufayd* "white", *mayz* "table" may be mentioned in illustration of the disintegration of the \bar{e} . Furthermore, many words, like the just quoted *šer*—*šir*, are currently heard with either \bar{e} or \bar{i} : thus, for instance the verbal particle *mī-* is as often pronounced with its contemporary Persian sound, as with the $y\bar{a}-yi$ *majhul*; so also the privative preposition is heard either as *bi-* or *bē-*. Above and besides, the actual number of words pronounced with a $y\bar{a}-yi$ *majhul* seems to be in K. far below the number of such words as recorded in dictionaries. I therefore cannot wholly subscribe to the opinion emitted by Morgenstierne⁴ that "the old *majhul* vowels are preserved, \bar{e} always, even so far west as in Herat". As regards his opinion about the $v\bar{a}v-i$ *majhul* which, according to him⁵, is preserved as " \bar{o} generally, but with some variations according to the locality", I can only say that I have never been able to notice that sound in Kabul, but am compelled to admit its existence in Afghanistan having heard that sound in the speech of men hailing from Ghazni and elsewhere.

To sum up, we have in K. the following vowels :

\bar{a} , a_0 , a_1 , a_2 ; \bar{e} ; \bar{i} , i ; \bar{u} , u .

¹ That as against Ivanow, Rustic Poetry in the Dialect of Khorasan, JASB, 1926, pp. 244.

² See for it, for instance, Horn, Neupersische Schriftsprache (Grundriss d. Iran. Philologie I B.) pp. 32-33, 35.—see also my translation of Noeldeke's Iranian National Epic, Journ. of the K. R. Cama Oriental Institute, No. 6, Bombay 1925, pp. 156-157, and more especially note 1 on the latter page.

³ Cf. Horn, op. laud. p. 33.

⁴ Report on a Linguistic Mission to Afghanistan, p. 7.

⁵ *Ibid.*

Contrary to P., where the *izāfa* is always an *e*-(or *ye*-after vowels)-sound, very near to the above-described sound of the *yā-yi majhūl*, the *izāfa* in K. sounds as a definite sharp *ī*. It might be added here by way of parenthesis that the only two other instances of the occurrence of such a sound in P. known to me are the affirmative adverbs *balé* and the somewhat obsolete *ārē* (آری) "yes", a word which I have not met with in K.

As regards the consonants, they are the same as in P., that is: *b, p, t, th* (=s), *j, ě, h* (=h), *x, d, ḍ* (=z), *r, z, ž, s, š, ṣ* (=s), *ḡ, ḡ* (=z), *t* (=t), *z* (=z), *ʿ, γ, f, q, k, g, l, m, n, w, h, y*.

There is little, that calls for notice in the pronunciation of these consonants, except certain peculiarities connected with the *h*-sound, and the fact that, contrary to P., *γ* (غ) and *q* (ق) are two different sounds.

The *vāv* (و), which in P. has the pure sound of the English *v*, has in K. rather a tendency towards *w* after and between vowels¹.

The aspirates (*h, ĥ*) have a tendency to be dropped at the beginning of the word and to fall out when occurring in the middle of a word.

The dropping of the initial aspirate does not produce any further results except perhaps that, in the case of the Present tense forms of the verb *būdan*, that disappearance of the initial *hā-yi havvaz* is reflected even in the spelling of these forms which we encounter in print and in writing not only as است (inst. of هست), where it is not always easy to say whether the form of the *verbum substantivum* is not meant, but also as استند (A A. inst. of هستند). It is most probable that the remaining forms of that verb (i.e., هستم - هستی - هستید - هستید) would also be spelt in the same way, but I have not come across any of them either in print or writing, as the occasions on which these forms might be used are comparatively rare. Further examples of the dropping in speech though not in writing both of the initial *hā-yi havvaz* and of the *hā-yi hutū* will be found in the vocabulary.

In the middle of a word, however, a vowelless *h*-sound is not only apt to fall out, but its disappearance produces, as would be expected, a compensatory lengthening of the preceding vowel, so that *a* becomes *ā*, *i* becomes *ē* and *u* becomes *ū*. Neither the disappearance of the *h*-sound, nor the lengthening of the vowel are, however, in any way expressed in writing.² Thus:—

¹ Cf. also Lorimer, Notes on the Gabrī Dialect of Modern Persian, JRAS, 1916, p. 432.

² Cf. for it also Ivanow, Rustic Poetry in the Dialect of Khorasan JASB, 1926, p. 243 below.

The long \bar{a} in K. is the same as in P. That is to say, it is an open \bar{a} pronounced with the lips held in the shape necessary for pronouncing o . That sound, however, has in individual cases in K. the same tendency as in Western Persia towards becoming a long \bar{o} , without, however, ever lapsing altogether into that sound.¹

A sound peculiar to K. is the $y\bar{a}$ - $y\bar{i}$ *majhul* non-existent in P.² It is a sound very near the F. \acute{e} fermé (\acute{e} accent aigu) and is generally expressed in transcription by \bar{e} . Sundry A. words containing the diphthong ay are also sometimes pronounced in K. with an \bar{e} sound. I am able to quote only one example of this viz. $x\bar{e}l$ (A. خيل) q. v., but there are certainly a few more such words in K.³

On the other hand, the $y\bar{a}$ - $y\bar{i}$ *majhul* in words of purely Iranian origin seems to begin to be partly discarded (probably under the ever-increasing influence of P.) or to get resolved into the congenerous diphthong. Thus along with *ser* for "tiger" one often hears $\bar{s}ir$ (more particularly in names, like $\bar{s}ir$ -*Ahmad*, etc.), while such words, as *umayd* "hope", *sufayd* "white", *mayz* "table" may be mentioned in illustration of the disintegration of the \bar{e} . Furthermore, many words, like the just quoted $\bar{s}er$ — $\bar{s}ir$, are currently heard with either e or \bar{i} : thus, for instance the verbal particle $m\bar{i}$ - is as often pronounced with its contemporary Persian sound, as with the $y\bar{a}$ - $y\bar{i}$ *majhul*; so also the privative preposition is heard either as *bi*- or $b\bar{e}$ -. Above and besides, the actual number of words pronounced with a $y\bar{a}$ - $y\bar{i}$ *majhul* seems to be in K. far below the number of such words as recorded in dictionaries. I therefore cannot wholly subscribe to the opinion emitted by Morgenstierne⁴ that "the old *majhul* vowels are preserved, \bar{e} always, even so far west as in Herat". As regards his opinion about the $v\bar{a}$ - $v\bar{i}$ *majhul* which, according to him⁵, is preserved as " \bar{o} generally, but with some variations according to the locality", I can only say that I have never been able to notice that sound in Kabul, but am compelled to admit its existence in Afghanistan having heard that sound in the speech of men hailing from Ghazni and elsewhere.

To sum up, we have in K. the following vowels:

\bar{a} , a_0 , a_1 , a_2 ; \bar{e} ; \bar{i} , i ; \bar{u} , u .

¹ That as against Ivanow, Rustic Poetry in the Dialect of Khurasan, JASB, 1926, pp. 244.

² See for it, for instance, Horn, Neupersische Schriftsprache (Grundriss d. Iran. Philologie I B.) pp. 32-33, 35.—see also my translation of Noeldke's Iranian National Epic, Journ. of the K.R. Cama Oriental Institute, No. 6, Bombay 1925, pp. 156-157, and more especially note 1 on the latter page.

³ Cf. Horn, op. laud. p. 33.

⁴ Report on a Linguistic Mission to Afghanistan, p. 7.

⁵ *Ibid.*

شهر (P. *šahr*) "city" is pronounced *šār*.¹
 مهر (P. *mīhr*) "love" ,, *mēr*.
 مهر (P. *mūhr*) "seal" ,, *mūr*.

The same rule is to a certain extent and with slight variations still applicable in the case of the *h*-sound beginning a syllable in the middle of the word, that is when it is provided with a vowel. When the vowel in the preceding syllable is the same short vowel as the one connected with the *h*, the latter falls out and the two short vowels melt together into one long:—

دهن (P. *dāhān*) "mouth" is pronounced *dān*.
 سحر (P. *sahar*) "down" ,, ,, *sār*.

When, however, the vowels in the two adjoining syllables happen to be of different quantity or quality (or both together), the *h* falls out and the vowel of the preceding syllable is lengthened:—

مہین (P. *mihān*) "greatest", etc., is pronounced *mīn*.

A diphthong may be reduced in such a case to a mere long vowel:—

شوهر (P. *šawhar*) "husband" is pronounced *šār*.
 جوهر (P. *jawhar*) "essence" ,, ,, *jār*.

The final sonant aspirate after *a* falls off producing thereby a compensatory lengthening of the preceding vowel:—

دس (P. *dah*) "ten" is pronounced *dā*.

A final *h*-sound preceded by an *i* turns the latter by falling off into an *a*:—

گیره (P. *gīrīh*) "knot" etc. is pronounced *gīra*.
 مصالح (P. *maṣāliḥ*) "materials" is pronounced *maṣāla*.

I do not feel in a position to say whether the above rule could be considered as extending to the *h* in the case of a preceding *u*. First of all, words containing that combination are very few, and of the two I can think of, I have heard the one pronounced in both ways, that is:—

¹ Rieu (Catalogue of the Persian Mss. in the British Museum, vol. II, 1881, p. 723a, in a most valuable excursus on the Gūrān dialect (see for it Houtum-Schindler, Beiträge zum kurdischen Wortschatze, ZDMG., XXXVIII, 1884, p. 44 under G.) registers the same phenomenon of the disappearance of the aspirate with an ensuing compensatory lengthening, which however, contrary to K. is expressed in writing.—Geiger (Grdr. d. Iranischen Philol., I, p. 387) records summarily that peculiarity as a feature common to the Central Iranian dialects.—This peculiarity seems to be, in a greater or lesser degree, common to all Iranian dialects, as also to the vulgar speech in Persian itself.

نُه (P. *nuh*) "nine" pronounced either *nū*, or as in P. *nuh* whereas the other word نُه is most decidedly pronounced with the preservation of the aspirate, that is, like in P., *guh*. The fact that the latter word can be heard almost exclusively in the speech of the lower (i.e., illiterate) classes of the population makes it highly improbable that it could have been in any way affected by the "literary" language in the matter of pronunciation.

Another and quite peculiar kind of influence seems to be exercised in certain words by the falling out of the *h*-sound, namely not only on the preceding vowels, but also on the adjoining dentals, which become thereby unvoiced. Thus:—

شَهْد (P. obs. *šahd*) "honey" is pronounced *šāt*.

عَهْد (P. *'ahd*) "agreement" ,, ,, *āt*.

میدهم (P. *mīdeham*) "I give" is ,, ,, *mītam*¹.

As regards the forms of the latter verb such an unvoicing of the dental is also encountered in vulgar speech in P.,² where the voiced dental stop has a tendency to resolve itself under the influence of the disappearing *h* into a dull sound in other isolated words as well, as, for instance, *Meyti* in vulg. P. instead of مهدی *Mahdī*, pr. n.

As regards other consonants, the deviations displayed in them as compared with P. are of lesser importance being more or less common to most of the Iranian dialects, and partly also met with in the ordinary P. speech of the illiterate. Those deviations are as follows:—

The vowelless *b* at the end of a syllable after *a* or *ā* becomes *w*, forming thus with the preceding vowel a diphthong *aw* or *āw*:—

شب (P. **shab*) "night" is pronounced *shaw*.

آب (P. *āb*) "water" ,, ,, *āw*³.

This change is never recorded in spelling and the words undergoing it are spelt in the ordinary way as in P.

The closing *d* of a syllable containing a long vowel in the 3rd pers. sing. Past Tense of certain verbs tends to become in pronunciation *t*, that is to say, becomes unvoiced. Thus:—

¹ Cf. for this also Morgenstierne, Report on a Linguistic Mission to Afghanistan, p. 8.

² Not only "in other Eastern Pers. dialects and in the Kashan dialects", as Morgenstierne, loc. cit.

³ Cf. for this also the most valuable, but unfortunately extremely brief, hints regarding the Dēhwārī dialect in Mr. Denys Bray's Report on the Census of Baluchistan for 1911 quoted in LSI, vol. X, p. 452.

ایستاد (P. *ēstād*) is pronounced *ēstāt*.

بود (P. *būd*) „ „ *būt*.

This peculiarity is no more recorded in spelling than is the above case of the voiced labial becoming a semi-vowel, but nevertheless it seems to point to the old pronunciation of the final dental as expressed in writing in older P. works and in Pahlavi,—in the former by means of the A. letter *š* showing that it must have been sounded at a certain period as a voiced dental spirant, the latter through a mere *t* (whatever its exact pronunciation may have been at different epochs).¹

This peculiarity naturally disappears whenever the fuller forms of the verb are concerned, the voiced dental being again reinstated:—

ایستاده is pronounced *ēstāda*.

بوده „ „ *būda*.

The final *d* of the 2nd pers. Plur., both in the Pres. and in the Past Tense, is pronounced as *n*:

میراويد (P. *mīravīd*) is pronounced *mīrawīn*.

رفتيد (P. *raftīd*) „ „ *raftīn*.

This peculiarity is, however, also extremely common in vulgar speech in P.

The sound *f* seems to be felt as foreign to the language and, although it is certainly used and pronounced as such by the literate, the common people are mostly simply unable to pronounce that sound, which becomes in their speech *p* when beginning a syllable, *w* when vowelless (that is closing a syllable). Thus:—

فرهاد (P. pr. n. *Farhād*) is pronounced *Parhāt*.

افغان (P. *Afghān*) „ „ *Awghān*.

That particularity is common to Tājiki as well, and seems to be very old, to judge by the fact that in Pahlavi there is one sign only to express both *f* and *p*.

In several words we find, as against P., a kind of incre-

¹ We find, however, instances in the older literary language of the final dental in the 2nd pers. Plur. of verbs being expressed by a ت The *Nawal Kishore* edition (Lucknow, 1887) of the *Divān* of Shams-i Tabrizi has, for instance, preserved certain such forms, e.g., on p. 202 l.9.

we read: مارا چو بموئيت بردوست بموئيت. I am inclined to think that such spellings, essentially phonetic, as also certain other peculiarities in the language of Jālu-d-Dīn, must be attributed to the Eastern-Iranian origin of the poet. That is to say, that they are Tājiki in the wider sense of the word, not P.—

mental *-n* added to the final vowel of the word without any apparent reason. Those words are:

galūn, *sūn*, *qālīn* and *yakhan* (v. Vocabulary).¹

The first of these words has not been met with in writing, but is very current in K. speech². No such final-*n* can be traced, however, either in the older forms of that word (Aw. *garah*³, *garemoḥva*⁴; Phl. *garōk*, *galōk*⁵), nor in modern Iranian dialects (Pšt. *gharra'h*,⁶; Kd. *gerū*⁷; Central dialects *gālī*⁸).

sūn (سُون) along with the usual *sū* (سُو) "side":—

ī sūn biyā "come here!"

ū sūn biraw "go there!"

has also an incremental *-n*, the presence of which is not warranted, as far as I can see either by the Pahl. form of the word (*sōk*), nor by any dialectical word of the kind.⁹

The two other words are T. loan-words in P., where they occur as *qālī* or *ghālī* and *yakha* respectively.

The *-n* in the first of them (although never occurring in P.) seems to be originally T., as the dictionaries give both forms of the word, but ascribe to them slightly different meanings, *qālī* being explained as "a costly kind of carpet"¹⁰ or "grand tapis velu et de qualité supérieure"¹¹ and *ghālī* as "a costly carpet"; according to others, "a small carpet or rug"¹² or "petit tapis".¹² No such distinction naturally exists in P., where the second, increased form does not exist at all, nor is such distinction traceable in K. where only that second form of the word is used. I have heard the Turkomans of the Caspian shores call "a carpet" *kolyn* or *kolun*, which is obviously the T. pronunciation of our K. (from Tājīkī?) word.

The last word *yakhan*, as already mentioned, is also of T. origin, being originally in T. *yaqa* (spelt more commonly *یاقا*,

¹ I find a further similar instance in the case of the word پهلُو (*pahlū*) "side" in W. Ivanow's Persian as spoken in Birjand, JASSB, XXIV, 1928, which occurs with such an incremental-*n* in No. 38 p. 283 and in No. 87 p. 295.

² Cf., however, Lorimer, *Phonology*, pp. 178a and 193a.

³ v. Horn, *Neupersische Schriftsprache* (Grd.) p. 55.

⁴ Salemann, *Mittelpersisch* (Grd.) p. 279.

⁵ *Ibid.*

⁶ Raverty, s.v.

⁷ Socin, *Die Sprache der Kurden* (Grd.) p. 257 § 21.

⁸ Geiger, *Centrale Dialekte* (Grd.) p. 383 § 160.

⁹ Steingass, s.v. gives *sūn* "a part, a side," without any further explanation.

¹⁰ Steingass, s.v.

¹¹ Kieffer et Bianchi, *Dictionnaire Turco-Français*, s.v., who, however, give both the words with the mention, "s.p." (i.e. "substantif persan").

¹² Kieffer et Bianchi, s.v.

but also *āz*).¹ In P. words of T. origin the *q* and *kh* are mostly interchangeable, hence P. *yakha*,² in which some popular etymology connecting it with *yakh* "ice" (in the sense of "frozen" i. e. "stiff") might be also reflected.

Parallel forms of this kind are not unknown in literary P. we have for instance *zamī* and *zamīn* for "earth", but there the *-n* is fully justified, as part of the original suffix with which the word has been formed, the shorter form being without any doubt of a later formation.³ The same relation exists also between the two P. words for "golden", where again an old adjectival suffix is accounting for the *-n* in *zarrīn*, whereas the Adjective *zarī* is, so to say, a secondary formation from the noun itself with a Modern Persian suffix *-ī* (*yā-yī nishat*).

We may, therefore, maintain that the *-n*, at least in K. *galūn*, *sūn* and *yakhan* is incremental and might have its origin in some analogy with other words ending in *-an* and *-un*. As regards *qālīn*, the *-n* is probably originally T., but that fuller form has somehow been adopted in K. (probably through the channel of Tājikī) and has not found access into P. This latter consideration makes one think that the fuller forms *galūn*, *sūn*, and *yakhan* in K. may have received that incremental *-n* under the influence of T. (and probably also through the medium of Tājikī).

The Kābuli pronunciation of Arabic words

The pronunciation of A. loan-words (if we may call thus that essential and integral part of the Persian language) is regulated in P. by certain firmly established, albeit unwritten rules. All these rules chiefly tend to one and the same goal—the strict preservation of at least the outward shape of the A. words adopted in P., so that the structure of the A. word should be damaged as little as possible. The final short vowels of the A. terminations, as entirely foreign to the P. language, are dropped including the *tanwīn*'s. Of the latter, however, the Acc.-termination *-an* when used adverbially, is often preserved in P. pronunciation, although in most cases the A. final *mute alif* after that termination is sounded, whereas the termination itself disappears.⁴ The A. consonants and vowels are naturally pronounced according to the general rules of P. pronunciation, but their order is practically never disturbed, the vocalisation of the consonants remaining strictly the same as in the

¹ *Ibid.*

² Stein gass, however, does not give it at all, but gives instead *āz* *yagga* "the collar of a garment; the seizure of anyone by the collar."

³ Cf. Horn, op. laud. § 23, p. 58, note 1.

⁴ With regard to the use of A. accusative-forms of adverbs in P. and K. see below, pp. 37-38.

original A. The instances where A. words have undergone in P. some slight alterations with reference to the vocalisation are very few. Two or three of the most current of such words may be cited here: A. لَكْدَ (lakd^{an}) "a blow, a cuff, a kick"—in P. *lakad*, with an unwarranted vocalisation of the medial consonant. This alteration, however, is not felt as such and the word in its altered form is used in P. exclusively.

A. اِمَامَتَه (imāmat^{an}) is generally pronounced in P. 'ammāma, but such pronunciation of that word, though almost universal, is considered in P. as vulgar and as incorrect.

كَفْنٌ وَكَفْنٌ "funeral" (lit. "wrapping in the shroud and burying"), is mostly pronounced in P. *kafan-u-dafan* even by the literate, owing to the natural confusion of the rare word *kafn* (an abstract noun) with the very current and common *kafan* (applied in P. not only to the wrappings of the corpse, but also to a kind of shirt-like white garment worn in ordinary life by dervishes, or donned by flagellants¹ on the 10th of Muḥarram, etc.). The undue vocalisation of the second word is the result of a natural impulse towards alliteration or synharmonization of two closely connected words.

A. عَلَيَّ حَدَّةٌ ('alā hida^{ti}) is currently pronounced in P. 'alāhiddā², with an undue reduplication of the final consonant. This pronunciation of the A. expression is also felt to be erroneous and is, in consequence, avoided by the literate classes of the population.

To sum up, the A. words in P. are, mutatis mutandis, preserved in their original shape. Neither a vowel, nor a consonant can disappear in the P. pronunciation of an A. word. Neither a vowel, nor a consonant can be arbitrarily added in an A. word in P., in other words, a *sukūn* cannot be supplanted by an unjustified vowel or vice-versā, nor can a consonant be reduplicated at will, where no such reduplication exists in the original A. word, nor can a reduplicated consonant of an A. word be arbitrarily reduced to a simple consonant, except at the end of a word.—

These rules seem to be inexistent in K.

The most blatant example of the violation of these rules is the current introduction of an unnecessary vowel in A. words in the place of a *sukūn* for the medial consonant. A superfluous syllable is thereby created and A. monosyllabic words

¹ See for this my "Muḥarram in Persia", Visva-Bharati Quarterly, July 1923, p. 126.

² Written in one word: عَلِيَّحَدَّة.

become thus converted into disyllabic words. The accent of the word remains in that case nevertheless in its original position, that is on the first syllable. One or two examples will suffice, as a few more of such cases are also recorded in the annexed Vocabulary :

A. شمع (P. *sham'*) is pronounced *shū-mā*.

A. قتل (P. *qatl*) „ „ *qū-tal*.

This intercalated vowel disappears whenever the word so modified receives in its normal course an additional vowel at the end, (i.e., when it is followed by an *izāfa*, a *yā-yi rahdat*,—*ishārat*,—*nisbat*, a vowel-conjunction¹) or any word beginning with a vowel. For instance :

قَتْلِ عَالَمِ will be pronounced as in P. : *qatl-i-āmm* “universal massacre”.

بَنِ دَخْلِي نَدَارَد will be pronounced—*ba-ma dukhli nadārad* “it does not concern me”.

عِلْمٌ وَجَهْلٌ will be pronounced—*ilm-u-jihl* “learning and ignorance” (v. Vocabulary under the second word).

A *tashdīd* or a vowel in A. words can disappear or be dropped in K. pronunciation. A most current K. word, in which both these irregularities occur at the same time, is the A. اِطْلَاع (P. *ittilā'*), which is pronounced in K. *illā*, the correct pronunciation of the word being altogether unknown in K.

As already hinted at above in the paragraph on the disappearance of the *h*-sound, the purely A. *hū-yi hutūi* (حُ) is treated exactly in the same way as the *hū-yi havvaz* (whether in P. or A. words), which would have been inadmissible in P. That, however, is the case not only in K., but also in Gūrān²

¹ That is the و whenever it is pronounced ā. The conjunction in P. has, in fact, according to circumstances, three different pronunciations : (1) *va* between two sentences, or two words when it plays the rôle of a disjunctive, rather than conjunctive particle ; (2) *ā* between two words which form together one logical complex, that is, are synonyms, or antonyms, or generally go in couples, when the first of them ends in a consonant ; (3) *vā* when the first of the two words of such a complex ends in ā or a. When the first of two such words ends in ī, the ā of the conjunction receives a supplementary connecting *y*-sound and becomes *yā*. In P. poetry only (2) and (3) are used. I maintain that the latter two are altogether different in origin from (1), which is the A. conjunction *wa* adopted in P., whereas (2) and (3) represent the old Iranian conjunction : AP. *uta*, Phl. *u*. All this only by the way.

² Cf. for this the most concise and valuable excursus by Rieu, in his Catalogue of the Persian Manuscripts in the British Museum, vol. II p. 728 b-729 (Gūrān dialect).

and Tājiki¹, which latter is probably chiefly responsible for all these aberrations with regard to A. in K.

The *l* of the A. article *al-* is often left unassimilated before solar letters in K. pronunciation. This is apt to occur before *s* and *n*, certainly never before *r* and hardly ever before the other solar letters. Examples, however, of such pronunciation as *Abdul-Samad* (inst. of 'Abduṣṣamad عبد الصمد) and *Abdul-Nabī* (inst. of 'Abdunnabī—عبد النبي) can be currently heard in K. speech, and not only from the illiterate.

One more peculiarity in K. speech as opposed to P., is the preferential pronunciation and spelling of the A. feminine termination —*atun* ($\frac{ا}{ت}$) as *-a*, whereas the more generally adopted pronunciation and spelling for such words in P. is *-at*. Thus:

K. *tarbiya* (تربیه) = P. *tarbiyyat* "education".

K. *alāma* (علامه) = P. *ālīmat* "sign, mark".

The exceptions to this rule are somewhat striking as they concern often words that are, by exception, pronounced in P. with *-a* instead of *-at*: For instance:

K. *mudākhalat* (مداخلت) = P. *mdākhle* "concerning oneself with something, meddling".—

ijāzat (اجازت) = P. *ajāze* "permission".

A great number of words of this kind coincide, however, in pronunciation, as far as the termination is concerned, with the forms current in P., as *barakat*, *tiḡarat*, *dawlat*, *zīnat*, *sifarat*, *ṣirkat*, *vizārat*, etc. etc.

Etymological and Syntactical

The Noun

The peculiarities with regard to nouns in K. chiefly concern the formation of the plural, where the termination *-hā* (*-hā*) seems to be used for preference, even in cases when P. has *-ān* (ان). For instance *صاحب منصب های عسکری* (A.A., M.A.) = P. *صاحب منصبان نظامی* "military officers".

Furthermore, the A. feminine plural-termination *-āt* (ات) is freely used for Persian words, as, for instance:

pēsh-āmādāt (OL. پیش آمدها) = P. *pīsh-āmādhā* (پیش آمدها)

"happenings".

kārāt (کارات) = P. *kārha* "doings; works", v. Vocabulary.

¹ Cf. Teufel, Quellenstudien zur neueren Geschichte der Chānāte, ZDMG., XXXVIII, 1884.

rasīdāt (رسیدات) = P. رسیدها - رسید "receipts", v. Vocabulary.¹

This combination is not altogether foreign to P., where the termination *-āt* for the plural in certain definite words has been firmly established to the exclusion (in most of the cases) of the usual plural formation in *-hā* or *-ān*. The more current and common instances of such words in P. are :

باغات (but also باغها) "gardens"

دهات "villages"

نوازشات "caresses"

میوه جات "fruits"

قلعه جات² "fortresses"

سبزه جات "vegetables"

نوشتہ جات "writings, letters"

روزنامه جات "newspapers"

Altogether foreign to P. is the K. treatment of A. broken plurals as ordinary Persian singulars, that is the appending to them the usual Persian plural-terminations *-ān* and *-hā* :

K.—A.A. تاجاران (*tujjārān*) = P. تاجرها or تاجار "merchants".

K.—A.A. اولادها (*awlād[h]ā*) }
A.A. اولادان (*awlādān*) } = P. اولاد "children" :

(*awlādhī-yi azīzum* "my dear children" was the usual form in which the Amīr addressed the people in his speeches).

¹ Such formations are current in Tājīkī, cf. Teufel, Quellenstudien zur neueren Geschichte der Chānate, ZDMG., XXXVIII, 1884, p. 246, and more especially the long footnote on the same page; also Geiger, Bemerkungen über das Tādschīkī (Grdr., I, p. 408).—In Abdu'l-Karīm Bukhārī's Text (Histoire de l'Asie Centrale par Mir Abdu'l-Kerim Boukhary, publiée, traduite et annotée par Charles Schefer, Paris, 1876) I can record (besides words like باغات common to P. as well, see below) only one instance of such plural formation which occurs twice طوبخانه جات p. 48 l. 19 and p. 52 l. 6. It is interesting to see that not a single case of such plural-formations occurs in the old Tabagāt of Anṣārī described by Ivanow in his valuable monograph already mentioned (op. laud. pp. 28–29).

² These first five words are recorded in Salemann and Shukovsky's Neupersische Grammatik, Porta Linguarum Orientalium, Berlin 1889, §12, note 1. The last two of them are given in the form معوجات and قلعات, with the explanation that "the mute *ṣ* is converted in the Arabic style into ج". That, however, is not the case, the *j*-sound here being the result of the re-assertion, before a vowel, of the old guttural Phl. termination *-k*, which first becomes voiced between two vowels and is further softened into a palatal: *k* > *g* > *j*. The mute *ṣ* is mostly preserved in writing in such instances in K.: .. نوشتہ جات not نوشتجات etc.

Instances of such double plurals are very numerous, but do not exclude the correct use of A. broken plurals in isolated instances. This, however, may be due to quite recent influences on the part of P. and probably also to an earlier influence exercised by literary Persian, as in Tājikī such A. plurals are throughout and exclusively handled as Persian singulars.¹—

Of a quite recent origin probably are the hybrid formations for different *nomen agentis*, like

barqīwālā (برقی والا) “electrician”

čūbwālā (چوب والا) “woodseller”

xarwālā (خر والا) “donkey-driver”, etc., in which the H. suffix *-wālā* takes the place of some corresponding P. suffix.²

Abstract nouns by means of a *yā-yi mašdar* are currently formed in K. from the Past Participle, a formation which is altogether foreign to P. These abstract nouns denote by their very nature (as originating from the Past or, we may say, Passive or Perfect-Participle) a passive or past state and seem to stand for a Passive Infinitive³. Syntactically, however, such forms in K. serve mostly to express adjectives (*iṣṭā'a* + abstract noun). Examples of such expressions are given in the Vocabulary, but we may as well repeat one of them here to emphasize the point: OL. یاد داشت فرستاده گي خود. “The note sent by yourself” (lit. “of your own sending”).

Unclear to me is an incremental final *-a* which obviously appears both in nouns and adjectives merely at the whim of the speaker (or the writer, as the case may be), as for instance:

tana (تنه) along with *tan* (تن) “body”:

AA... نکند اگر تنه را کج “if he does not bend [his] body...”

qarza (قرضة) along with *qarz* (قرض) “debt; loan”:

¹ Cf. Toufel op. laud. 246-7; we find in Abdul-Karīm's text: جملهٔ اعیانان (“things” p. 102 l. 9; اعیانان “grandeess” p. 56 l. 17; افعالها “actions” p. 54 l. 16; تجاران p. 100 l. 13; بیعت نمودند p. 102 l. 5; p. 103 l. 18; on p. 103 ll. 15, 16 we find تاجر in the sense of a singular, but also تاجر p. 104 l. 6: ده بار متاع دارد: تاجر p. 104 l. 10: تواریخها — میگرد از تاجر; p. 105 l. 21: تاجر مالها را گذاشته ... میآید. از رجالان ایلنوزر خان: p. 85 l. 2: رجالان p. 108 l. 3.

² Cf. also Morgenstierne, Report p. 9.

³ Cf. also Ivanow, *Tabaqat*, p. 340 and idem, *Rustic Poetry in the Dialect of Khorasan*, JASB, XXI, 1925 p. 251, who somewhat loosely mentions such formations as being compounded with “the suffix *agi*”, but considers them quite correctly to be “a sort of substitute for the infinitive”, in the first of these two papers, and as having “rather a passive meaning”, in the second monograph of his.

AA. انگلیس به لهستان قرضه میدهد "England gives a loan to Poland"¹.

dāra (داره) along with *dār* (دار) "gibbet"

muta'ayyana متعین instead of the P. متعین "appointed":

-OL. وزیر مختار متعین ژاپون "appointed Minister Plenipotentiary to Japan"².

Adjectives

There is very little to be noted in the case of adjectives, beyond two or three unusual comparative degree formations, like:

bisyārtar (بسیار تر) = P. بیشتر "more"

bētartar (بهتر تر) = P. بهتر "better"⁴.

Sometimes the comparative degree of an adjective is expressed by placing the word *ziyādatar* (زیاده تر—in itself uncommon in P.) "more" before the positive degree of the adjective:

MA. ارزان تر زیاده (*ziyādatar arzān*) = P. ارزان تر "cheaper".

Certain adjectives implying in themselves a difference of size, quantity (not uncommon in P. as well) or quality are used simply in the positive degree in conjunction with or to indicate comparison. For instance:

az ma kalān (از من بزرگتر) = P. از من بزرگتر "bigger than I"⁵.

az ū pur-zūr (از او پر زور) = P. از او پر زور تر "stronger than he".

Certain adjectives formed by means of a *yā-yi nisbat* from nouns ending in *-ā* intercalate instead of the usual connecting *-y-* (ی), *a-w-* (و):

itālāwī (ایطالیایی) = P. ایتالیائی "Italian"

kīmiyāwī (کیمیائی) = P. کیمیائی "chemical".

¹ In this case the *-a* is, however, probably merely the A. *waḥdat*-termination *at*, but the word is uncommon in P., where either simple *قرض* or *استقرض* would be used in that meaning.

² The form is a puzzle, which is still more increased by Steingass who gives s. v. "*mata'ayyana* (sic! with an *a* after the *m*!) A station, post, command; an appointment; establishment".

³ I find only one instance of that form in Abdul Karīm p. 94 l. 1.

⁴ Salemann and Shukovsky, Neupersche Grammatik, register, in §22 note, a case of the comparative degree بترتر in the Shāhnāma.

⁵ Cf. Morgenstierne, Report, p. 8.—Abdul-Karīm has also

هسته بزرگست text, p. 67 l. 14 (Schefer, Traduction, p. 153

l. 9-10; "[Mehammed Houssein Khan Tourh]est l'aîné des fils [d'Emir Hayder]").

⁶ Normally one would besides have expected *itālīyāwī*.

It is possible that these formations are based on the analogy with A. *nisba's* from nouns in *-ā*, like *دنیوی - دنیا* - *رضوی - رضا*; *دنیوی* - *دنیوی* where, however, the long *ā* merely becomes resolved into a short *a* + *v*.

The suffix *-wār* (وار) obsolete in P. is of current use in K. and is easily tacked on to any suitable noun or adjective, but mostly in conjunction with an additional suffix *-ī* (*yā-yi nisbat*), which latter seems in that case to impart an adverbial meaning to the compound. Thus:

nāxūšwārī (نا خوشواری) "as if ill";

mastwārī (مستواری) "as if drunk; like one drunk";

zanwārī (زن واری) "like a woman";

*xānawārī*¹ (خانه واری) "similar to a room";

rasmīwārī (رسمی واری) "semi-officially";²

The adjective is very often placed in K., as against P., before the noun to which it belongs, e. g.:

AA. *Yahya-khan* بهیخی خان رئیس سابق = P. *Yahya-khan, the former director* (v. Vocabulary s. v. *mudār*);

yak sust ādam (یک سست آدم) = P. *ādam sust* "a weak man";

yak sangīn ādam (یک سنگین آدم) = P. *ādam sangīn* "a dignified man";

yak xurd bača (یک خرد بچه) = P. *bača xurd* "a small child";

latīf ādam as (لطیف آدم است) = P. *ādam latīf* "he is a pleasant man";

zaki ādam as (زکی آدم است) = P. *ādam zaki* or *zaki ādam* "he is a virtuous man";

MA. *yak xudmet bīr* (یک خدمت بزرگ) = P. *ādam xudmet* "a great service".

Such transposition of the adjective is not altogether foreign to P., but occurs rather seldom and only in cases where greater stress has to be laid on the quality implied by the adjective. A *yā-yi vaḥdat* (and not the numeral *یک*) is then necessarily used, e. g., *ādam xub as* "he is a good man," but *xub as* "he is a (very or really) good man".

¹ Not to be confused with *خانوار* or *خانوار* "family; house".

² For examples of words formed with the suffix *-wār*, v., for instance, Horn, Neupersische Sprache (Grdr. d. iran Phil. I) p. 191.

Numerals

of the numerals in K. differ in pronunciation from P. are:

(شش)	instead of P. <i>šiš</i> "six"
(هفت) <i>h</i>	„ „ <i>häft</i> "seven"
(هشت) <i>h</i>	„ „ <i>häst</i> "eight" ¹
()	„ „ <i>däh</i> "ten"
(پنجاه) <i>panj</i>	„ „ <i>panjäh</i> "fifty"
(هزار) <i>haz</i>	„ „ <i>hazār</i> "thousand".

numerals differ from P. altogether in their formation (ng):

l (دو صد) ² = P. *duisat* "two hundred"

d (سه صد) = P. *sīsād* (*sīsād*) "three hundred" ⁴

ad (پنج صد) = P. *panvad* "five hundred" ⁵.

ral formation *sadhā* (صدها) "hundreds" uncommon frequently to be met with in K.:

exte to by very reali
to hundred kinds of
ents".

conjunction *-u-* (,) between the figure of the tens and of the units is mostly omitted in writing in K. Thus: not "thirty times five", but "thirty five" ⁶.

omission of the conjunction in the middle of a containing a fractional is even more equivocal:

the compound numerals of the two latter, *—apdā, azdā* (هز).

Tājikī that would seem to be the current form: Abdul- as it throughout his text, namely: p. 2 l. 1; p. 5 l. 14; p. 3 l. 8; p. 38 l. 23; p. 77 ll. 21, 22; p. 106 l. 17; Muhammad s it once in the passages quoted by Teufel, o. c. p. 339 l. 3.

دوین, but his language seems generally to be influenced by ersian to a far greater extent than that of A.-K.

z sound here is probably produced by the presence of the final

bdul-Karīm has throughout صد سه p. 43 l. 5; p. 45 l. 12; p. 63 l. 4; p. 77 l. 21; p. 78 l. 6; p. 97 ll. 18, 22. Md. A mīn

the literary form: صد سه Teufel, o. c., p. 361 l. 7.

re 'Abdul-Karīm has, however, the literary form پانصد

same, seemingly, in Tājikī: 'Abdul-Karīm has the same in the same shape p. 103 l. 11, and, پست چار for "twenty 41. 20. Md. A mīn omits the conjunction also in other cases, ces the same by a *zamma* as recorded by Teufel, o. c., p. 245.

دو نیم روپیہ = P. دو روپیہ و نیم and does not mean "two half-rupees", as it would seem on the face of it, but "2½ rupees";¹

سال (sic) یکنیم does not mean "half a year", but "a year and a half";

دو نیم صد is not "100" ("two half hundreds"), but "250".

AA. سه نیم میلیون does not mean "three half-millions", but "three millions and a half";

- In certain cases numerals are apt to take an *izāfa*. Thus:
dū-yi awwalaš (دوی اولش) "the two first ones"²;
sē-yi digar (سے دیگر) "the three others".

The H. *lak* لک is, contrary to P., used in K. to denote "one hundred thousand".

The word *kurūr* (کرور), which means in P. "half a million" (500,000) is used in K. in the sense attributed to it in India, that is for "ten millions" ("a crore").

Pronouns

Some slight deviations from the P. forms of the Personal Pronouns are shown in K. The pronoun of the first pers. Sing. drops generally in current speech the final *-n*, and is pronounced with the harsh *a*-sound peculiar to K.,³ so near to the long *ā*, that it is mostly impossible to distinguish that form from the first pers. plur., which is often used in popular speech instead of the singular form by modesty or by courtesy, so to say. As we encounter it, however, sometimes (though very seldom) in writing spelt as *ma* (ما),⁴ there cannot be the slightest doubt as to the existence of such a form to denote the singular pronoun.

The pronoun of the first pers. plur. is mostly used in K. with a plural termination in the form *māyān* (مایان), both in speech and in written documents. This form seems to have altogether superseded the shorter form, which is, however, often used in vulgar polite speech, along with *ma* by a single

¹ Cf. also my "Afghan Weights and Measures", JASB, XXIV, 1928 p. 424, note 4.

² Thus also 'Abdul-Karīm in a passage altogether misunderstood by Schefer, text p. 95 l. 6-8; هفت شهر که بسر حد ملک خطا قریبست مثل کاشغر و یارکند و خطن و آقسو و ایله و دوی دیگر دست.*

³ Registered by us above in the chapter on pronunciation as *a*.

⁴ Cf. for this for instance, my "Notes on the Afghan Periodical Press" "Islamic Culture" (Hyderabad, Deccan) No. 1 vol. III, 1929, p. 161 (or p. 26 of the separate reprint). Cf. also the above quoted remarks on *Dēhwārī* in L.S.I., vol. X, 452.

speaker when referring to himself. To indicate plurality the word *mardum* "people" is sometimes added to the shorter form, the expression *mā mardum* (ما مردم)¹ taking then the place of the more current *māyān*.²

Exactly the same can be said with regard to the 2nd. pers. Plur. where the form *šumāyān* (شمايان) is predominant, alternating in isolated cases with *šumā mardum* (شما مردم).³

The 3rd pers. Plur. of the personal pronoun is *ūšan* (اوشان),⁴ as against P. ايشان. One encounters sometimes also a corrupted form *ūnā* (اونها) [AA., OL.], which outwardly seems to be a contamination of the colloquial P. pronunciation of the plural form of the demonstrative pronoun, (اينها pronounced *ūnhā*) and of the 3rd pers. Sing. of the personal pronoun (او—*ū*) but which is, in fact, the plural of the demonstrative pronoun *ū*, with an incremental—*n*—of the same kind as in *sūn*, *galūn* (v. s. p. 11) and *fīristāndan* (s. infra, p. 31).

The pronominal affixes are of a somewhat less extensive use than in P. Their position in the sentence seems to be looser than in P., which produces in the 1st person by contamination with the personal termination of the verb, very strange forms, the real meaning of which is no more realized by the natives⁵.

This looseness of connection between the pronominal affixes and the words to which they belong finds in K. a graphical expression as well, these affixes being mostly written

¹ Cf. Morgenstierne, Report, p. 8; also Teufel, Quellenstudien, p. 247.

² The state of things in Tājīkī is exactly the same. In fact, the form مایان is almost exclusively used in Abdul-Karīm's text, where we encounter it: p. 2 l. 5; p. 5 ll. 16, 17, 19; p. 7 ll. 13, 17, 19; p. 11 l. 17; p. 16 l. 12 bis; p. 21 ll. 1, 6, 12; p. 22 l. 19; p. 26 l. 1; p. 54 l. 21; p. 59 ll. 17, 19; p. 65 ll. 19, 23; p. 66 l. 6; p. 97 ll. 11, 12. The shorter form ما occurs only once or twice, and then to denote the 1st pers. Sing. Md. Amīn has مایان T. p. 375 l. 11 and ما مردم T. 301 l. 31 note; T. 375 l. 9.

³ The same in Tājīkī: شمايان Abdul-Karīm p. 7 l. 14; p. 8 l. 12; p. 16 ll. 14, 16; p. 30 l. 3; p. 33 l. 23; p. 34 l. 1 bis; p. 51 l. 23; p. 52 l. 1; p. 56 l. 15; p. 62 l. 3. Md. Amīn T. 373 ll. 1, 3. The latter has, however, once شما as against K.: T. 358 l. 12 کيست شما.

⁴ In Gilakī also similarly *ūšan*, cf. Geiger, Die Kaspischen Dialekte, (Grdr. d. Iran, Phil. I) p. 360.

⁵ Cf. Vocabulary under *taslim*.

as separate words in cases where in P. they would be written conjointly with the word to which they belong. Thus:

عید استقلال تان مبارک "[may] your Day of Independence [be] blessed!" (in the heading of a printed programme of the Paghman *Mēla*). Words ending in a vowel often take before the pronominal affixes a connecting -y- (-ی-) and it is a question, whether that -ی- is not meant to express the status constructus (*izāfa*), e.g., هر دوی شان = P. هر دو تا شان "both of them".—¹

The possessive relation is expressed not by the *izāfa* as in P., but by the preposition *az* (از) "of", sometimes pleonastically preceded by the word *māl* (مال) "property", so current in P. which takes then an unnecessary *izāfa*: *kitāb-i māl-i az ū* "his book".—

The reflexive pronouns are the same as in P. *xud* (خود) and *xīš* (خویش), the latter occurring in its pronominal sense only in writing (newspapers), whereas in current speech it is used only in its adjectival meaning of "relative". *Az xud* (از خود) means "own"² and is currently used in reply to the challenge of night watchmen, police, etc., in the same sense as the E. "friend".—

In current speech the reflexive pronoun *xud* is often used (and even misused) in the sense of "but" (or even without any particular sense which could be attributed to it³), where in P. the relative *ak* would be expected. In this case, the final *d* of the word is generally dropped.⁴ Thus:

tu xu raftī! "but you went (there)!"

jūr xu astī? "but you are well?"

An uncommon in P. plural-formation *xudhā* (خودها), where one would expect in P. خودشان "themselves", often occurs in K.⁵

The demonstrative pronouns are: *īn*, *ī* (این) "this", *ān*, *ū* (آن) "that". The forms *این* and *آن* are used in writing, but *ī* and *ū* prevail in current speech. The plurals

¹ Cf. above under "Numerals" دوی اولش

² Cf. also 'Abdul-Karīm, text, p. 90 l. 10: معتمدی از خود حاکم: "établit comme gouverneur d'Aral un personnage possédant sa confiance" (Schefer, Traduction, p. 199 l. 11-12) —

³ Cf. Ivanow, *Tabaqat*, p. 33.—

⁴ Cf. also LSI, vol. x, p. 452, where the same dropping of the final -d is recorded for *Dēhwārī*.—

⁵ Cf. also Teufel, *Quellenstudien*, p. 247.—

and *ūnā* seem to me to be formed rather from *ī* and *u* with incremental-*n*-, than from the correct literary forms. *ī[n]* (همین); *hamān*, *hamū* (همان - همون); *ēinān* (چنین); *hamēu* (O.L. همچو), *hamēi* (همچو), as also the more al in P. *hamēinān* (همچنین). Not seldom all the three ns may be encountered in the same column of a newspaper icle, etc.

The A. demonstrative pronoun *هَذَا* takes mostly place of its Iranian equivalent in documents of the official d:

موتور کار هذا "this motor car" (on a ticket for free admission to the Mēla of Paghmān);

پسا پورٹ هذا "this passport", and so forth.

The interrogative pronouns are the same *kī* (کے) l *ēi* (چه) as in P.

The relative particle *kī* (کے) is used in the same y as in P.

The indefinite pronouns are the substantival (کس) "somebody; anybody" and the adjectival *kudām* (کدام) "some" the latter most extensively and sometimes onastically and, so to say, unnecessarily used in that sense K., whereas the same word is only an interrogative onoun in P. meaning "which?" Thus:

kāsi nabūt (کسی نبود) "there was nobody";

kudām ādam āmada (کدام آدم آمده) "a man has come".

Other indefinite pronouns are: *īē* (هیچ) "some", ith a negation "none"; *ar* (هر) "every" and *ama* (همه) "all", the latter two being often confused with each other and taking often the meaning of *ama*: *ar šab* (هر شب) not necessarily meaning, for instance, "every night", but very ften "the whole night", etc.

ar (هر) takes sometimes also the place of *īē* (هیچ) as ell, and is used with a negation. For instance:

AA. و در هر موقع از بذل شفقت مادرانه خویش خودداری نکرده اند
and on no occasion has she (the Queen) abstained from displaying her motherly kindness (lit: "and on every occasion, she did not abstain", etc.)¹.

Other indefinite pronouns are the same as in P.—

¹ Cf. also for a similar expression 'Abdul-Karīm, text, p. 54 l. 19.

The Verb

The 1st pers. Sing. ends in *-um*,¹ as against P. *-am*. One is sometimes fortunate enough to come across such pronunciation expressed even in writing:

OL. ^{دادم} (sic: *dārrum*) = P. ^{دارم} "I have".

In the 3rd pers. Sing. the final *-d* is generally dropped by the illiterate and in current speech, which latter, however, is the case in P. as well. Thus:

mēšava, *mīšava* = P. ^{میشود} (pronounced *mīšavad* and, in current speech, *mīšē*) "it is possible; it is all right".—²

In the 2nd pers. Plur. the final *-d* of the termination has a tendency towards becoming *-n*, which tendency is, however, common also to P. current speech. A good example of it is found in Specimen II of *Badakhshī LSI.*, vol. X p. 530:

kamar basta-kunēn "gird up [your] loins", along with the ordinary form *kunēd* (probably a misprint for *kunēd*) a few lines above in the same *Specimen II*.³

The 3rd pers. Plur. generally drops the final *-d* of the termination, again a peculiarity common to P. as well, where the sole distinction in current speech between the Infin. and the 3rd pers. Plur. Past Tense lies in the accentuation (*raftān* "to go"—*raftān* "they went").—

The Future Tense is formed as in P. by means of the auxiliary verb *xāstan* (خواستن) "to wish; to will", but the treatment of the component parts (i.e. of the verb conjugated and of the auxiliary verb) is essentially different from the standards firmly established and common both to literary Persian and to P.

No single definite rule covering the whole of the Future conjugation in K. can be established. For the 1st pers. Sing. and the 1st pers. Plur. the auxiliary verb is used in the 3rd pers. Sing. Pres. Tense and the verb conjugated takes the personal forms of the Past Tense. Thus the Future Tense will be:

داده بود "he was never without the company of the learned" (lit. "he always was not", etc.). It is unnecessary to add that such turns of phrase are entirely foreign to and inadmissible in P.—

¹ Cf. also Ivanow *Rustic Poetry*, p. 252.—

² Cf. also Lorimer, *Phonology* p. 140 § 16.—

³ Lorimer, *Phonology*, gives throughout forms in *-in* for the 2nd pers. Plur. in his paradigms (pp. 161–166), but does not otherwise point out this peculiarity.—

1st pers. Sing. *xāhad raftum* (خواستم رفتن) = P. خواهم رفت
 or *ēi xāhad kardum?* (چه خواهم کردم) = P. چه کنم
 "what shall I do?"

1st pers. Plur. *xāhad xāstīm* (خواستیم خواستن) = P. خواهیم خواست

e.g. OL. *naxāhad xāstīm* (نخواستیم خواستن) "we won't demand".

For the 1st pers. Sing., however, a combination of the 3rd pers. Sing. of the auxiliary verb with the first pers. Subjunctive Mood of the verb conjugated is also used¹.

The 3rd pers. Sing. uses the same form of the auxiliary verb, but the verb conjugated is taken in its Subjunctive Mood. Thus, from the verb بودن "to be" the Future Tense will be: 3rd pers. Sing. *xāhad bāšad* (خواهد باشد) = P. خواهد بود
 e.g. *dar manzil xāhad bāšad* "he will probably be at home".

The 2nd pers. Plur. is formed by prefixing the personal form of the auxiliary verb to the Infinitive of the verb conjugated. Thus:

2nd pers. Plur. *xāhīd raftan* (خواهید رفتن) = P. خواهید رفت

e.g. *sabāh wāqit xāhīd raftan?* (صبح وقت خواهید رفتن) = P. صبح زود خواهید رفت "will you be going early in the morning?"

The 2nd. pers. Sing. and the 3rd pers. Plur. are also formed in the same way, i.e.:

2nd pers. Sing. *xāhī raftan* (خواهی رفتن) = P. خواهی رفت

3rd pers. Plur. *xāhan raftan* (خواهند رفتن) = P. خواهند رفت

For the 2nd and 3rd pers. Plur. we find, however, also another and most interesting formation, the auxiliary verb being used, as above, in its personal form and followed by a form ending in *-a* of the verb conjugated. I suggest that this form is a curious remnant of an ampler obsolete form of the Infinitivus apocopatus, otherwise untraceable either in P. or in literary Persian, the similarity in form of which with the Past Participle is merely a fact of casual external coincidence. Thus, for instance: OL. *roze ra ānجا خواهند گذاشته* = P. خواهند گذاشت "they will pass the day there".

If we sum up what has been said here, we arrive at the following paradigm of the Future Tense in K.:²

¹ Cf. also Morgenstierne, Report, p. 8.—

² I take here deliberately only such formations as have been

Singular

1st pers.	<i>xāhad raftum</i>	<i>xāhad bugīrum</i>
2nd „	<i>xāhī raftan</i>	
3rd „	<i>xāhad raft</i>	<i>xāhad bāšad</i>

Plural

1st pers.	<i>xāhad xāstīm</i>	
2nd „	<i>xāhīd raftan</i>	
3rd „	<i>xāhan raftan</i>	¹ خواهند گذاشته

These heterogeneous and heteroclit formations are so singular, that one is irresistibly compelled to ask the question: where do these formations come from?

I feel tempted to suggest that these formations must be of a quite recent origin, with the exception of those of them which contain the Infinitive of the verb conjugated in its full form and that, up to recent times, K. was probably unacquainted with the use of any compound Future Tense in its form current in P. The Present Tense or Subjunctive Mood forms did probably serve to express the idea of futurity as well, for which we have sufficient proof in P., where these forms are freely used along with compound formations to denote a near or an indeterminate future. Most probably, in older K. a kind of compound Future formation consisting of the personal forms of the auxiliary verb in the Present Tense accompanied by an Infinitive were in exclusive use. We have such forms in the 2nd pers. Sing. and the 2nd and 3rd pers. Plur. of our paradigm.

We cannot account for formations such as the 1st pers. Sing. and Plur. of our paradigm (in the first column) unless we hold that the 3rd pers. Sing. (*xāhad raft*) was more or less recently imported from outside (Persia). If the Persians themselves feel the different origin of the two externally coinciding forms of the Infinitivus apocopatus and the 3rd pers. Sing. Past Tense,—the Afghans certainly do not.

I maintain, therefore, that formations like *xāhad raftum*, *xāhad xāstīm* are K. neologisms based on a total misunderstanding of the real value of the apocopated form of the Infinitive in P. compound Future formations, where the second link of the compound was mistaken by the Afghans for a 3rd pers. Sing. Past Tense, and endeavours were made by them in consequence to construct forms for the remaining persons on the same pattern. The forms so coined were adopted

recorded by me in Kabul as actually heard in current speech or seen in writing. This accounts for the different verbs used in the paradigm.—

¹ The forms given in transcription are those heard by me in speech. the one in original characters has been seen in writing.—

and became very current, but must have struck the natives themselves as being somewhat queer, which resulted in further gropings towards some more satisfactory combinations. Hence the forms recorded in the second column of our paradigm.¹—

Another phenomenon peculiar to K. and unknown in P. is the extremely current habit of splitting verbs, in the sense of fabricating new compound verbs out of the most ordinary simple verbs in general use. These new composite verbs are coined on the pattern of the ordinary composite verb in P., where one of the auxiliary verbs added to a noun or an adjective contributes to the latter the necessary verbal sense. In K. formations under discussion the place of such noun or adjective is taken, however, by the Past Participle, the Present Participle, or the Imperative of an already existing and otherwise currently used verb, the meaning of which is integrally transferred to such a new composite formation. A few examples will suffice :

basta kardan (بسته کردن) } = P. بستن “to shut : to
band kardan (بند کردن) } close”.

e.g. *darwāza basta* (or *band*) *ku* (دروازه بسته - بند - کن)
“shut the door!”—

nawīšta kardan (نوشته کردن) = P. نوشتن “to write”.

dānista šudan (دانسته شدن) = P. دانستن “to know ; to understand”.

e.g. *ki dānista šavum* “so that I should know”.

istāda kardan (استاده کردن) = P. استادن “to stop”.

e.g. *istāda ku* (استاده کن) = P. ایست “stop!” (when telling a coachman, etc., to stop).

pursān kardan (پرسان کردن) = P. پرسیدن “to ask”.

zāt kardan (زاد کردن) = P. زائیدن “to give birth”.

dāšta būdan (داشته بودن) = P. داشتن “to have, to possess”.

¹ I am unable to trace any compound Future formations in ‘Abdul-Karīm’s text, and the solitary instance of a compound Future that I find in M.d. Amīn: عمان تومن فلك (T. 386 l. 12) only serves by its context to show, to what extent that author was under the influence of literary Persian, a fact severally pointed out by Teufel himself in the course of his monograph.— A further indirect proof of the recent origin of these formations in K. is, in my opinion, the total absence of any mention of a Future Tense in Lorimer’s otherwise extensive and detailed paradigms of Badakhshānī and Madaglashtī conjugations (Phonology, pp. 161–166). Nor does he as much as mention the existence of any Future Tense anywhere else in his above mentioned sketch, though, of course, the material Lorimer had at his disposal seems to have been extremely meagre.—

e.g. OL. نداشته میباشد = P. اطلاع ندارند "they have no information".

The examples of such composite formations could be multiplied, as there are practically no limits to this forcible disintegration of common P. verbs.

The utter unnecessariness of such a procedure and the clumsiness of the forms thus obtained are such as to call for an inquiry into their possible origin. Yet, I am unable to suggest any plausible hypothesis, except that they must be comparatively¹ recent and have possibly come into existence under some foreign influence, formed, it may be, on the analogy of similar expressions in some non-Iranian language².

The negation is placed in K., as against P., before the verbal prepositions. Thus:

nabrāmada (نه بر آمده) = P. بیرون نیامده "he has not come out";

ma nawar-dāštum (من نه رداشتم) = P. من ورنداشتم "I did not take (it)".

The particle *mī*-is also placed in K. before the verbal prepositions. Thus:

AA. میبراید (sic *mībrāyad*) = P. بیرون میاید "comes out";

AA. از بین میبردard (*az bayn mībardārād*) = P. از بین بر میدارد "takes away; makes lose; destroys".

The particle *mī*-precedes in K., as against P., the negation. Thus:

mīnabrāyad (می نه بر آید) = P. بیرون نمیاید "he won't come out".³

¹ I cannot trace any such expressions, in 'Abdul-Karīm's text and I find only one instance of such a split verb in Md. Amīn نواخته میکردی "he was playing (the tune of....)", with a pleonastic *yā yi istimrārī*, instead of مینواخت.

² The expression *band kardan* and *basta kardan* remind one persistently of the H. باند کرنا, and it is very difficult to decide, as in most instances where we find analogous expressions in K. and in H., whether the H. expression is the original or whether it is rather formed on the analogy of the K. construction.—In my opinion, the latter is mostly the case.—These split-verb formations could, on the other hand, have been influenced or introduced by Central Asian Turks.—

³ We find, however, such a sequence in older literary Persian: Cf., for instance *Min ū ĩhrī* اسبی که صفیرش نرنی می نخورد آب الخ (A. de Biberstein-Kazimirski, *Menoutchehri*, poète persan du

In composite Tenses the negation in K. is tacked on to the auxiliary verb. Thus, for instance :

AA. تحصیل نکرده بود = P. تحصیل نکرده بود "he has not studied".

The Past Participle is very largely used in K., sometimes pleonastically, e.g. :

bēl giriftā biyār (بیل گرفته بیار) = P. بیل بیار "bring a spade", where one is inclined to think of the H. *lā āo*. But, I repeat it again, it is difficult to say which way the influence has been displayed.—

Impersonal sentences expressed in P. simply by means of the 3rd. pers. Plur. Pres. Tense, are mostly rendered in K. by the Past Participle of the verb with the 3rd pers. Sing. of the auxiliary verb شدن, e.g. :

gufta mēšava (گفته میشود) = P. میگویند "it is said".

AA. انتظار کرده میشود که = P. منتظر آن هستند که "it is expected that.."

Such split-verb (or otherwise) Passive formations are apt to govern in K. the Accusative case, e.g. :

AA. مسافر کسی را میگویند = P. مسافر کسی را میگویند a traveller is called a person, who...."

AA. دو نفر مرتکب یک جنایت را میگویند = P. دو نفر مرتکب یک جنایت را میگویند "two persons commit the same crime".

No clear distinction is made in K. between the A. Participle and the A. verbal abstract noun (*masdar*). This limitation becomes most conspicuous in the construction of composite verbs, like :

mumkin dāra (ممکن دارد) [Amoer in a speech] = P. امکان دارد or ممکن است "it is possible";

rizā šudan (رضا شدن) = P. راضی شدن "to agree";

tasarruf šudan (تصرف شدن) = P. تصرف نمودن "to conquer to occupy":

AA. قشون فرانسه زول را تصرف شدند "the French troops have occupied Z.";

safā kardan (مفا کردن) = P. پاک کردن "to clean".—

Very peculiar are certain forms of the Past Participle in *-ak* instead of the ordinary *-a*-termination, current, however,



only, it would seem, in the speech of Hazāras.¹ For instance:

ū būdak = P. او بود "he was";

ma hasiak = P. من هستم "I am";

āwurdak = P. آورد - آورده "he brought".

Abstract nouns derived from the Past Participle, which are certainly closely connected with the forms mentioned here², seem also to be currently used among the Hazāras³.

Causative verbs are far more current in K. than in P. Two groups of such verbs deserve, however, a special attention. The first of these groups we might class as unnecessary formations, like the above discussed split-verbs, that is, new secondary formations to which the meaning of the original verb is integrally attributed. For instance:

šikastāndan (شکستاندن) = P. شکستن "to break":

ī āyīna-rā ū šikastānd (این آئینه را او شکستاندن) "it is he who has broken this window-pane";

firistāndan (فرستاندن) = P. فرستادن "to send, to dispatch, to forward":

ī xatt-rā ba wazīr sā'ib mīfiristānīm (این خط را بوزیر صاحب میفرستانیم) "we shall forward this letter to the Minister".—

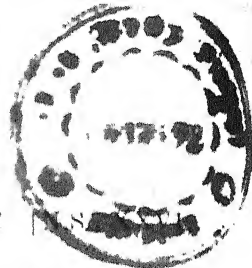
As regards this latter verb, for all we know, the *-n-* in it might be merely an euphonical incremental consonant. Or else, the verb *فرستاندن* probably imported at some comparatively late period from Persia (the current K. variant of it *firistīdan* being unmistakably very old) was somehow felt as being, owing to the presence of the long *-ā-*, a kind of causative from the usual *firistīdan* and the *-n-* was inserted in order to make it more "regular-like". However it be, the verb *firistīdan* is used nowadays in current popular speech in K. and *firistāndan* in official correspondence, newspapers, etc. The latter form seems to be also extremely common (if not exclusively used) in Tājikī⁴.

¹ My attention was first drawn to these forms by Madame A. Foucher, who accompanied in 1923-1925 her husband to Afghanistan on his archæological mission and had many opportunities of coming across Hazāras in their own country. I have since often heard such forms from Hazāras residing in Kabul.—

² v. ante p. 17.

³ Cf. Morgenstierne, Report, p. 8.—

⁴ In 'Abdul-Karīm's text we find: میفرستانیم p. 33 l. 18; p. 35 l. 1; p. 81 l. 6; میفرستانای p. 102 l. 12; نمیفرستاناید (2nd pers. Plur.) p. 26 l. 6;



The second group are causative verbs derived directly from A. abstract nouns (*maṣḍars*), e.g. :

qabūlānīdan (قبولانیدن) "to make accept" :

i-ra-ba-ū mīqabūlānīm "we will make him accept it" ;¹

qawlānīdan (قولانیدن) "to promise; to guarantee"

(v. Vocabulary)².

The verb *fāmānīdan* (فامانیدن) "to make understand", although not used in P., is not derived, like the preceding one, directly from an A. noun, but is a regular causative to the simple *fāmidan* (in K. pronounced *fāmīdan*), very current both in K. and in P.

For other causatives not used in P. v. Vocabulary under *dānānīdan*, *guzaštāndan*, *pazīrāndan*, etc.

Two peculiar composite verbs *tastīm šudan* and *dānīsta šudan*, the real syntactical meaning of which is lost as far as the Afghans themselves are concerned, deserve a more special attention. The first of these verbs is used in K. in two different meanings. The first of these meanings (v. Vocabulary) is based on the above-discussed confusion in K. of A. Participles and verbal nouns (*maṣḍars*) and does not present any special interest beyond that current K. irregularity.

The second meaning of that verb, which would be understood in P. as "to be handed over, to be transmitted" is singularly enough not a Passive, but an Active and transitive one in K., where it is taken to signify "to receive". The expression "I have received" or "received by me" in receipts (for salaries, others sums of money, letters, etc.) is rendered in K. by *تسلم شدم* (*tastīm šudam*). Moreover, the expression *امضاء تسلیم شونده* in accountancy ledgers, or printed receipt-and acknowledgment-

فرستانیدن (id.) p. 34 l. 23; *فرستانند* p. 101 l. 9; *فرستانید* (3rd pers. Sing. Past Tense) p. 26 ll. 5, 13; p. 63 l. 5.—The instances of that verb in M. d. Amīn's text are enumerated by Teufel in his above-quoted monograph on p. 251.—

¹ The verb in question most singularly reminds one of the Huzvariśh form *maqbalūntan* in Pahlavi, the Iranian equivalent of which is *padīraftan* "to accept", and more especially of the form in Ys. 8, 9/4 *maqbalūniyayēt* quoted by Salemann in his Middle-Persian Grammar (Grdr. d. iran. Phil. I p. 315) as a Passive Present. The absence in K. of any simple verb of this root and the existence in current use in K. of an Iranian equivalent (v. Vocabulary), emboldens me to suggest that this might be one of the rare cases of a Huzvariśh word finding its way into colloquial Persian where the Aramaic prefix *ma-*, after the word had been taken up integrally, was turned into the Iranian verbal particle *mī*.—

² This verb seems to be formed on the analogy of the preceding and has also no simple form.—

forms (of the Post Office, the Telegraph Office, etc.), in the headings of the signature column in peon books, etc., clearly shows that the verb *taslīm šudan* is considered in K. to be an Active transitive verb, not a Passive formation as in P.—Such a way of using and understanding that compound verb is based on a misinterpretation of an old construction with the pronominal affix appended to the auxiliary verb instead of the substantival part of the compound. As has been already pointed out, the connection between the pronominal affix and the word to which that affix logically belongs is somewhat loose in K. (as most certainly also it was in Pahlavi). In the particular expression we are discussing the pronominal affix was probably tacked on to the auxiliary verb in order to avoid the repetition of the same consonant in the termination of the word *taslīm*. Thus, naturally, تسليم شد = تسليم شد = تسليم شد. —The etymological sense of the combination was later on, and probably long ago, lost from view, which in consequence gave rise to such unwarranted expressions, as the above quoted امضاء تسليم شونده.

The verb *dānistān* (دانستن) “to know” is currently used in K. also in the meaning “to understand” (along with *fāmidan*, v. Vocabulary). It is in this particular meaning that it has given rise to a form entirely analogous to the above-discussed *taslīm šudan*: *dānistā šudam* (دانسته شدم) does certainly not mean “I became known”, but, being a 3rd pers. Sing. Past Tense with the pronominal affix of the first pers. tacked on to the very end of the compound, it is equal to دانسته ام شد = دانسته من شد “it became known to me”. A further proof (if any is required) of the correctness of my interpretation of the above two strange expressions is found in the polite phrase often recurring in K. conversation: *dānistā-yi šumā šuda bāša* (دانسته شما شده باشد) “you might have understood . . .” or “I hope, you understand . . .”, where the place of the pronominal affix is taken by a personal pronoun, revealing thereby the underlying construction of the preceding expression.

The verb *tuwānistān*, *tawānistān*, *tānistān* (توانستن) “to be able”, constructed in P. generally with the Subjunctive and only in impersonal sentences with the Infinitivus apocopatus, governs in K. throughout the ampler old form of the apocopated infinitive, a glimpse of which we had when discussing the formation of the compound Future. E.g.: *gufta namī-t[aw]ānum* (گفته نمیتوانم) = P. نمیتوانم بگویم “I cannot say” or “I could not say”:

AA. تواند شده = P. تواند شد “can become”;

AA. *their mentality could be improved* "their mentality could be improved";

AA. *cannot (i.e., must not) be mocked at* "cannot (i.e., must not) be mocked at";

fāmānāda t[aw]ānistum (؟) *"was I able to make myself understood?"* or *"... to make you understand?"*¹

A further peculiarity of the verb *t[aw]ānistum* in K. is that it can be used with abstract nouns or adjectives unaccompanied by any auxiliary verb (which occasionally also occurs in P.) E.g.:

isbāt mīl[aw]ānīm (اثبات میتوانیم) = P. *"we can prove (it)"*;

xarīdārī na mīl[aw]ānum (خریداری نمیتوانم) = P. *"I am not in a position to purchase"*;

AA. *they cannot lay hold on . . .*;

AA. *"can you make (them) obey?"*;

OL. *they can communicate by telegraph*;

OL. *they can take (the necessary) steps*;

OL. *he must be able to help and assist*.

An analogous construction can also be noticed with the verb *majbūr būdan* (مجبور بودن) *"to be compelled"*; for instance:

¹ Lorimer Phonology, records for Badakhshani and Madaglashti, however, only the construction with the Infinitive in its full form.

As regards Tājiki, we find in 'Abdul-Karīm's text mostly constructions with the full form of the Infinitive, namely: توانی کردن p. 54 l. 8; نمیتوانست کردن p. 57 l. 8-9; نتواند آمدن p. 62 l. 20; و قاطر نمیتواند عبور p. 101 l. 7; کار تواند کردن p. 82 l. 10; نمیتوانیم کردن p. 103 l. 13; میتواند شال بافتن p. 103 l. 18; نمیتواند گرفتن p. 108 l. 6.—One instance of a construction with an infinitivus apocopatus, where in P. the Subjunctive would have been used is encountered on p. 82 l. 10-11: توانیم نمود and one solitary instance of the correct use of the apocopated infinitive is found in the impersonal sentence میتوان گفت on p. 77 l. 8-9. I find only one instance of the Infin-apocop., but used contrary to P. syntax, in M. d. Amīn's text: سر نتوانستند بر آورد T. 299 l. 30.—

AA. شرکت قیمت آن را می‌پردازد است "the Company has to pay its value",

—, where we should expect, in conformity with the P. syntax some verb to be added to the noun قیمت in order to warrant the verbal meaning attributed to it, say بدهد or بپردازد "to pay", "to discharge".—

The verb *māndan* (ماندن) "to remain" is used in K. almost exclusively in the transitive meaning "to leave", a meaning entirely foreign to P. but encountered in isolated instances, along with its usual meaning, in older literary Persian.¹ One example will suffice:

māndum da sar- i mayz (ماندم در سر میز) = P. گذاشتم رو میز.
"I put or left (it) on the table".²

In connection with the word *nām* "name" the verb *māndan* is also used in the transitive sense in preference to the equally current verbs *guzāštan* and *n[īh]ādan*, e.g.:

alā'azrat-i šahīd Ustur nām māndan (علی حضرت شهید) "His Majesty the Martyr (i.e., Amīr Ḥabībullah-astūr) نام ماندند"

¹ I am able to quote here an example from Sa'dī's *Būstān*, where that verb is used both in the transitive and the intransitive sense, namely in the story of the "Idol of Somnath":

که کر زنده اش مانی آن بی هنر نخواهد ترا زندگانی دگر
"since, if you leave him alive, etc." (Lahore lithographed edition of 1917, p. 420) and four lines earlier in the story (p. 419) the same verb is used in its usual meaning:

که دانستم ار زنده آن برهن بماند کند سعی در خون من
"because I knew that, if that Brahman remained alive, etc."—

A. de Biberstein-Kazimirski, in the preface to his edition of the already cited *divān* of *Minūšihri*, quotes (p. 64 note) from the *Ta'rīkh-i Mas'ūdī* of *Bayhaqī* the sentence امیر المؤمنین را چون ماندني which he translates "en quel état a tu laissée le Prince des croyants?" and remarks on the "emploi du verbe ماندني comme verbe actif, emploi, du reste, en usage à cette époque" (i.e., in the V century A.H. = XI century A.D.) cf. also *ibid.* p. 106, note 2.—

² In *Tājiki* the state of things seems to be exactly the same: 'Abdul-Karīm's text contains the following instances of the use of در کابل شیر محمد خان ولد وزیر سابق احمد ماندني as a transitive verb: p. 19 l. 19. شاه را شاه ولي خان حاکم ماندني و زمان شاه را در بالا حصار کابل ماندني p. 30 l. 13. طپانچه را بسینه اش ماندني p. 23 ll. 3-4. بقفس ماندني p. 73 l. 21. — هيکي سخن را يکجا ماندني

The only instance of such a use of ماندني in Md. Amīn's text, T 366, l. 12 has already been quoted by me for another purpose *supra* p. 28 note.

Khan) gave it (the building of the Foreign Office) the name "Stor".¹—

In connection with the noun *kār* "work" *mān-tan* is used intransitively in the expression

az kār māndan (از کار ماندن) = P. کار نماندن "not to work; to be without work; not to be admitted to work".—

The Past Participle *mānda* (مانده) is used in the sense of "tired", where in P. the word خسته would be rather applied: *mānda nabāšī* "I hope, you are not tired".—This meaning of the verb *māndan* "to be tired" goes as far back as the pre-Muhammadan period: Phl. *māndakīh* "weariness".

The conjugation of *māndan* presents the peculiarity that in the Imperative and Subjunctive Moods the particle *bi-* coalesces with the body of the verb, thrusting out at the same time the initial *m-*, thus;

bān, *bānum* corresponds to P. بنام. This transmutation might have proceeded along one of two lines: either the initial *m-* of the stem was first assimilated in rapid speech with the *b-* of the particle, which further lost its vowel and then disappeared altogether, which is, in my opinion, less probable; or else, there first occurred an elision of the vowel in the particle², resulting in an initial *bm-*, which by metathesis became *mb-* and was further worn off to a mere *b*. This latter hypothesis seems to me more plausible.³

We should thus have the following two possible schemes for the course of that transformation:—

either *bimān* > *bibān* > *b'bān* > *bān*
or *bimān* > *b'mān* > *mbūn* > *bān*.

*The verb *raftan* (رفتن) "to go" in its personal forms is currently used in K. with any Past Participle to indicate continuity of the action expressed by the latter. That turn of phrase could be expressed in English by the verb "to go on" with a Present Participle and corresponds to the P. expressions constructed with the personal forms of the verb داشتن accompanied by the corresponding forms of the verb conjugated, with the particle *mā-* prefixed to the latter. The following examples will make this clear:—

hay xurda mērum (هی خورده میروم) = P. می دارم میخورم
"I am eating and eating";

¹ Cf. also in 'Abdul-Karīm's text: نامش جان نثار خان مانده بود 42 l. 10.—

² As in *b'rāmādan*, v. *supra*, p. 29 and Vocabulary s. v.—

³ Cf. Lorimer, Phonology, p. 144 § 27 (a) and (b).—

AA. زیادہ شدہ میرفت = P. زیاد میشد "went on increasing";

AA. دارد ترقی میکند = P. کابل بندریج ترقی کرده میروند
"Kabul goes on progressing gradually";

AA. دارند میافزایند = P. قوای خود را در چین افزوده میروند
"they go on increasing their forces in China";

AA. "they go on" دارند عقب مینشینند = P. عقب نشسته میروند
retreating";

MA. "goes" رو بترقی دارد میکند = P. رو در ترقی گذارده میروند
on looking for progress".

These examples could be multiplied indefinitely, as this mode of expression is extremely common, both in speech and in writing.—

The conjugation of the verb *raftan* offers few peculiarities beyond those common to the K. verb in general. The 1st pers. Sing. Pres. Tense is used mostly in its contracted form, the other persons, barring, as said, the specific K. deviations, (i.e., the dropping of the *-d* in the 3rd pers. Sing. and the 3rd pers. Plur., and replacing that of the 2nd pers. Plur. by *-n*) are regular:

1st pers. Sing.	<i>mērum</i> ¹ .
2nd " "	[<i>mī</i> =] <i>mērawī</i> ² .
3rd " "	[<i>mī</i> =] <i>mērawa</i>
1st " Plur.	[<i>mī</i> =] <i>mērawīm</i>
2nd " "	[<i>mī</i> =] <i>mērawīn</i>
3rd " "	[<i>mī</i> =] <i>mērawān</i>

The Past Tense offers no peculiarities beyond those already discussed.

In the Imperative Mood the prefix *bi-* is not synharmonized with the stem as in P.:

2nd pers. Sing.	<i>biraw</i> .
2nd " Plur.	<i>birawīn</i> .

The Adverb

There is little to be noted about the adverb in K. beyond the immoderate use of A. Accusatives for adverbial locations where in P. the adjective is used in its indeterminate form, with the A. termination dropped, to express the same meaning.

¹ I have not heard this form with a *yā-yi ma'rūf*.

² This and the remaining forms are currently heard either with *mī* or with *mē*.—

Khan) gave it (the building of the Foreign Office) the name "Stor".¹—

In connection with the noun *kār* "work" *māndan* is used intransitively in the expression

az kār māndan (از کار ماندن) = P. "not to work; to be without work; not to be admitted to work".—

The Past Participle *mānda* (مانده) is used in the sense of "tired", where in P. the word *خسته* would be rather applied: *mānda nabāšī* "I hope, you are not tired".—This meaning of the verb *māndan* "to be tired" goes as far back as the pre-Muhammadan period: Phl. *māndakīh* "weariness".

The conjugation of *māndan* presents the peculiarity that in the Imperative and Subjunctive Moods the particle *bi-* coalesces with the body of the verb, thrusting out at the same time the initial *m-*, thus;

bān, *bānum* corresponds to P. *بمانم*—*بمان*. This transmutation might have proceeded along one of two lines: either the initial *m-* of the stem was first assimilated in rapid speech with the *b-* of the particle, which further lost its vowel and then disappeared altogether, which is, in my opinion, less probable; or else, there first occurred an elision of the vowel in the particle², resulting in an initial *bm-*, which by metathesis became *mb-* and was further worn off to a mere *b*. This latter hypothesis seems to me more plausible.³

We should thus have the following two possible schemes for the course of that transformation:—

either *bimān* > *bibān* > *b'bān* > *bān*
or *bimān* > *b'mān* > *mbān* > *bān*.

"The verb *raftan* (رفتن) "to go" in its personal forms is currently used in K. with any Past Participle to indicate continuity of the action expressed by the latter. That turn of phrase could be expressed in English by the verb "to go on" with a Present Participle and corresponds to the P. expressions constructed with the personal forms of the verb داشتن accompanied by the corresponding forms of the verb conjugated, with the particle *mī-* prefixed to the latter. The following examples will make this clear:—

hay xurda mērum (هي خورده میروم) = P. *هي دارم میخورم*
"I am eating and eating";

AA. زیاده شده میرفت = P. زیاد میشد "went on increasing";

AA. دارد ترقی میکند = P. کابل بتدریج ترقی کرده میبرد
"Kabul goes on progressing gradually";

AA. دارند میافزایند = P. قوای خود را در چین افزوده میروند
"they go on increasing their forces in China";

AA. دارند عقب مینشینند = P. عقب نشسته میروند
"they go on retreating";

MA. "goes on looking for progress" = P. رو در ترقی گذارده میبرد
"goes on looking for progress".

These examples could be multiplied indefinitely, as this mode of expression is extremely common, both in speech and in writing.—

The conjugation of the verb *raftan* offers few peculiarities beyond those common to the K. verb in general. The 1st pers. Sing. Pres. Tense is used mostly in its contracted form, the other persons, barring, as said, the specific K. deviations, (i.e., the dropping of the *-d* in the 3rd pers. Sing. and the 3rd pers. Plur., and replacing that of the 2nd pers. Plur. by *-n*) are regular:

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The Adverb

There is little to be noted about the adverb in K. beyond the immoderate use of A. Accusatives for adverbial locutions where in P. the adjective is used in its indeterminate form, with the A. termination dropped, to express the same meaning.

(An is¹) *aksaran* (اكثر) = P. اكثر "mostly"

„ *aylaban* (اغلباً) = P. اغلب "chiefly"

AA. *mukarraran* (مكرراً) = P. مكرر "repeatedly"

„ *alāwatan* (علاوة) = P. علاوة "besides".

On the other hand, sometimes when we find in P. an A. Accusative with an adverbial meaning, the same word is apt to be used in K. in its indeterminate form, e.g.:

AA. اتفاق (ittifāq) = P. اتفاقاً (ittifāqan) "suddenly; by chance".²

A. Passive Participles in the Accusative are sometimes used in an adverbial sense, when in P. one would expect a *maṣḍar* either in the Accusative or, better, with some preposition, e.g.:

OL. محترماً = P. احتراماً or, better, با کمال احترام "respectfully".

A hybrid expression consisting of an unnecessary A. Accusative followed by a Persian relative pronoun is:

AA. وقتاً که = P. وقتیکه "at the time, when".

The negative adverb "no" (P. نه خیر or خیر نه) is in K. nay (نی). It has to be taken into consideration that in earlier literary Persian there existed originally four different words to express the negation, independent (adverbial) or dependent (particles).

The negative adverb seems to have been always the same nay, as we have to-day in K.³

¹ See my "Notes on the Afghan Periodical Press", *Islamic Culture* (Hyderabad, Deccan) vol. III 1, 1929, p. 147 ff. (or separate reprint p. 22 ff.)

² also found in 'Abdul-Karim's text, p. 102 l. 6: اتفاق ایلمچی خوقند را باب انداختن مقبول ساخت *

³ We find in a poem attributed to Abū Sa'īd b. Abī-l-Khayr (Zhukovskii's edition of the *Asrār-ut-tawhīd*, p. 370 l. 12):

نی نی ز ختن باد چنان خوش نوزد هیچ
"no, no! such a pleasant wind
never blows from Khutan".—Examples of this form of the negation can be easily found in literature: at the present moment, I can quote only one more instance of this reduplicated nay, viz. in the Persian

The negative particle with verbs was *na-* (نه) "not".

The negative particle with nouns and adjectives was *nā-* (نا) "un-".

The prohibitive particle (with the Imperative Mood of the verbs) was *ma-* (..... م) "not".—

A great deal of confusion with regard to the correct use of these different words seems to have prevailed already in very early times, so that the above differentiation has rather a theoretical than a practical value. As far back as Pahlavi only two forms have been recorded: one form *nē* (written ideographically *lā*) for the three first forms of our scheme, and the prohibitive *ma* (written *hal*). So that the differentiation into our four forms must have first originated in Islamic times to lead merely to further confusion. As far as P. is concerned, the difficulty seems to have been definitely solved by: (1) discarding altogether the prohibitive particle *ma-* (..... م), the place of which is henceforward taken by the ordinary negative particle (نه); (2) by preserving in connection with nouns and adjectives the particle *nā-* (نا); (3) by blending into one word in two forms the negative adverb *nay* (ني) and the negative particle *na-* (نه or نه) in such a way that, whatever the shading of the negation, it is always expressed by *na-* (نه or نه), except in the case when it precedes a verb beginning with a vowel, in which case the form *nay-* (ني-) reasserts itself.

We thus have:

	P.	K.
Negative adverb:	<i>na</i> (نه)	<i>nay</i> (ني) "no"
Negative particle with adjectives and nouns:	<i>nā-</i> (نا)	<i>nā-</i> (نا) "un-"
Negative particle with verbs:	<i>na-</i> , <i>nay-</i> (..... نه - ني-)	<i>na-</i> , <i>nā-</i> , <i>nay-</i> (..... نه - نا - ني-) "not".

The fact that all the three nowadays existing forms of the negative are used in K. as prae-verbal particles, as against only two in P., is based on the so current confusion in K. of

(Anīs¹) *aksaran* (اكثرًا) = P. اكثر "mostly"
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AA. اتفاقًا (*ittifāq*) = P. اتفاقًا (*ittifāqan*) "suddenly; by chance".²

A. Passive Participles in the Accusative are sometimes used in an adverbial sense, when in P. one would expect a *masdar* either in the Accusative or, better, with some preposition, e.g.:

OL. محترمًا = P. احترامًا or, better, با کمال احترام "respectfully".

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نی نی ز ختن باد چلن خوش نورد هیچ "no, no! such a pleasant wind never blows from Khutan".—Examples of this form of the negation can be easily found in literature: at the present moment, I can quote only one more instance of this reduplicated *nay*, viz., in the *Dīvān* of Shams-i Tabrizī: (the Nawal Kishore edition, p. 201 l. 4) "no, no! thou art not a confidant in this hidden secret".

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The negative particle with verbs was *na-* (نـ) "not".

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We thus have:

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Negative adverb:	<i>na</i> (نـ)	<i>nay</i> (نـي) "no"
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Negative particle with verbs:	<i>na-</i> , <i>nay-</i> (نـ..... - نـ.....)	<i>na-</i> , <i>nā-</i> , <i>nay-</i> (نـ..... - نـ..... - نـ.....) "not".

The fact that all the three nowadays existing forms of the negative are used in K. as prae-verbal particles, as against only two in P., is based on the so current confusion in K. of the harsh short *-a* in terminations with the ordinary long *-ā*, a fact which has already been pointed out in the course of this study. This confusion between these two sounds, and, in

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We thus have:

	P.	K.
Negative adverb:	<i>na</i> (ن)	<i>nay</i> (ني) "no"
Negative particle, with adjectives and nouns:	<i>nā</i> -(ن)	<i>nā</i> -(ن) "un-"
Negative particle, with verbs:	<i>na</i> -, <i>nay</i> - (.....ن -ني)	<i>na</i> -, <i>nā</i> -, <i>nay</i> - (.....ن -ني)
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 „ *alāwatan* (علاوةً) = P. علاوه “besides”.

On the other hand, sometimes when we find in P. an A. Accusative with an adverbial meaning, the same word is apt to be used in K. in its indeterminate form, e.g. :

- AA. اتفاقاً (*ittifāq*) = P. اتفاقاً (*ittifāqan*) “suddenly; by chance”.²

A. Passive Participles in the Accusative are sometimes used in an adverbial sense, when in P. one would expect a *maṣḍar* either in the Accusative or, better, with some preposition, e.g. :

- OL. محترماً = P. احتراماً or, better, با کمال احترام “respectfully”.

A hybrid expression consisting of an unnecessary A. Accusative followed by a Persian relative pronoun is :

- AA. وقتاً که = P. وقتیکه “at the time, when”.

The negative adverb “no” (P. نه خیر - نه) is in K. *nay* (نی). It has to be taken into consideration that in earlier literary Persian there existed originally four different words to express the negation, independent (adverbial) or dependent (particles).

The negative adverb seems to have been always the same *nay*, as we have to-day in K.³

¹ See my “Notes on the Afghan Periodical Press”, *Islamic Culture* (Hyderabad, Deccan) vol. III 1, 1929, p. 147 ff. (or separate reprint p. 22 ff.)

² also found in ‘Abdul-Karim’s text, p. 102 l. 6: اتفاقاً ایلمچی
 * خوقند را باب انداخته مقتول ساخت

³ We find in a poem attributed to Abū Sa’id b. Abī-l-Khayr (Zhukovskii’s edition of the *Asrār-u-t-tawhīd*, p. 370 l. 12) :

نی نی ز ختن باد چنان خوش نوزد هیچ
 “no, no! such a pleasant wind
 never blows from Khutan”.—Examples of this form of the negation can be easily found in literature: at the present moment, I can quote only one more instance of this reduplicated *nay*, viz., in the *Dīvān* of Shams-i Tabrizī: نی نی تو نه محرم این راز نهانی (the Nawal Kishore edition, p. 201 l. 4) “no, no! thou art not a confidant in this hidden secret”.—

The negative particle with verbs was *na*-(...ن) "not".

The negative particle with nouns and adjectives was *nā*-(ن) "un-".

The prohibitive particle (with the Imperative Mood of the verbs) was *ma*-(.....م) "not".—

A great deal of confusion with regard to the correct use of these different words seems to have prevailed already in very early times, so that the above differentiation has rather a theoretical than a practical value. As far back as Pahlavi only two forms have been recorded: one form *nē* (written ideographically *lā*) for the three first forms of our scheme, and the prohibitive *ma* (written *hal*). So that the differentiation into our four forms must have first originated in Islamic times to lead merely to further confusion. As far as P. is concerned, the difficulty seems to have been definitely solved by: (1) discarding altogether the prohibitive particle *ma*-(.....م), the place of which is henceforward taken by the ordinary negative particle (...ن); (2) by preserving in connection with nouns and adjectives the particle *nā*-(ن); (3) by blending into one word in two forms the negative adverb *nay* (نی) and the negative particle *na*-(ن or ..ن) in such a way that, whatever the shading of the negation, it is always expressed by *na*-(ن or ..ن), except in the case when it precedes a verb beginning with a vowel, in which case the form *nay*-(...ن) reasserts itself.

We thus have:

	P.	K.
Negative adverb:	<i>na</i> (ن)	<i>nay</i> (نی) "no"
Negative particle with adjectives and nouns:	<i>nā</i> -(ن)	<i>nā</i> -(ن) "un-"
Negative particle with verbs:	<i>na</i> -, <i>nay</i> - (...ن - ...ن)	<i>na</i> -, <i>nā</i> -, <i>nay</i> - (...ن - ن - ...ن) "not".

The fact that all the three nowadays existing forms of the negative are used in K. as prae-verbal particles, as against only two in P., is based on the so current confusion in K. of the harsh short -a in terminations with the ordinary long -ā, a fact which has already been pointed out in the course of this sketch. This confusion between these two sounds, and, in

consequence, between the negative prae-verbal and prae-adjectival particles, seems to be very old indeed ¹.

Other instances of peculiarly K. adverbs and adverbial expressions will be found in the Vocabulary.

The Preposition

The often occurring confusion between the preposition *ba* (با) and *bā* (بـ) has already been pointed out and exemplified in the chapter on Spelling.—

The preposition *dar* (در) mostly loses its final *-r* in current speech and becomes *da*²: *da sar-i mayz māndum* “I put (it) on the table”; *da dūkān šīšta* “he is sitting in (his) shop”.—

The vowel in the preposition *bar* (بر) undergoes an elision before verbs beginning with a long *ā*-, as has been pointed out in the chapter on Verbs.

The preposition *az* (از) is sometimes used instead of the preposition *ber* of P. :

AA. علاوه از آن = P. علاوه بر آن “in addition to it”,

sometimes used pleonastically after the preposition *badun* (بدون) P. “without”, K. “besides”, with which it is then connected by means of an *izāfa* :

badun-i az ū (بدون از او) “besides him”³.

It is also currently used in a similar construction with *barāy-i* (برای) “for” :

barāy-i az ū (برای از او) = P. برای او “for him” ;

and, in general, it is often used pleonastically in connection with an *izāfa* :

¹ I find an instance of this in ‘Attār’s *Tazkiratu-l-Awliyā* (Persian Historical Texts Series. vol. III. The *Tadhkiratu’l-Awliyā*, ed. by R. A. Nicholson, p. 188): هرگز خلافت نا کرده بود — not to speak of the several cases where it occurs in ‘Abd ul-Karīm’s text: p. 21 l. 4; p. 25 l. 16; p. 31 l. 19; کرده نا کرده p. 70 l. 5.—

² I need hardly mention here that Lorimer, *Phonology*, p. 150 § 36 is wrong in thinking that “perhaps it is a mere distortion of *bah*” (!), but his supposition (ibid.) that this form might have originated on the analogy with the Pashtu ablative-genitive particle *da*, although more plausible, has also to be rejected, as this lightened form occurs likewise in varieties of Persian speech, which happen to be outside the zone of Pashtu influences: cf. for instance Ivanow, *Rustic Poetry*, 255; id., *Persian as Spoken in Birjand*, 255.—

³ For the peculiar use of the preposition *badun* (بدون) “without” in the meaning of “except”, see Vocabulary s.v.—

AA. *tābir-i az ān* (تعبیر از آن) = P. *tābir ān* "the explanation of it";

māl-i az ū (مال از او) = P. *māl ū* "his";

xāna-yi az ū (خانه از او) = P. *xāna ū* "his room".

az is further used in definitions of time:

AA. *az chand sāl āst* (از چند سال است) = P. *chand sāl qabl* "several years ago";

NN. *az āwl mā* (از اوّل ماه) = P. *āwl mā bēd* "from the 1st of the month".

For the use of the compound adjective *amrā[h]* (همراه) as a preposition v. Vocabulary.—

Another synonym of *bā* (با) "with" is the extremely current *kat-i* (کت) "with":

kat-i ū or *kat-i az ū* "with him", etc. v. Vocabulary.—

The P. preposition *wasṭ* (واسطه) (pop. for *bawasṭ*) is not used in K., where its place is taken by the more vulgar *baxš* (بخش) or *baxša* (بخشه), v. Vocabulary.—

Prepositions are occasionally dropped (both in speech and in writing):

AA. *ke az ān ba xabar باشیم* (که از آن با خبر باشیم) = P. *ke az ān ba xabar باشیم* "so that we should be aware of it";

OL. *az qarar معلوم* (از قرار معلوم) = P. *qarar معلوم* "according to what is known; as is known".—

For the peculiar use of *mā-bayn* (مابین) "between" in the sense of "in, inside of" see Vocabulary.—

The Conjunction

The disappearance in certain cases of the conjunction *u* (و) "and" has already been mentioned in the chapter on Numerals.—

The causal conjunction in K. is *čūnke* (چونکه), as against P. *čūn* (چون) "because", and is used extensively and without any real necessity. I should like to think that it is under T. influence that this form has established itself in K. and further found its way into H.—

The disjunctive conjunction is *lākin*, *laykin* (لیکن - لاکن), as against P. *velākin* (ولیکن) or the more usual P. *lākin* (لیکن) "but".—

coming, by calling)", شرفیاب شدن "to seek honour (by calling), to call" (when speaking about oneself); چشم (lit. "eye", i.e. "as precious as my own eyes") "I deem it a duty!"; بنده "(your) slave", and many others, are not only entirely missing, but there is even no trace of any adequate equivalent for them in K.

The terms of affirmation and confirmation are extremely sober in K., and some of them look very much like mere translations from E. :

bālī sāib (بلی صاحب) ¹ "yes, Sir!"

bisyār xūb sāib (بسیار خوب صاحب) "very well, Sir!"

bisyār durust (بسیار درست) = P. درست - صحیح "correct!"

bisyār ālā (بسیار عالی) = P. باریک الله "that's fine!"

bisyār mērbānī (بسیار مهربانی) = P. مرحمت شما زیاد or "very kind (of you)!" (lit. "much kindness").

The word *sāib* is generally used in K. both for "Sir" and "Mr.", where in P. the term آقا is applied : ².

آقای وزیر امور خارجه = P. وزیر صاحب خارجیه "the Minister of Foreign Affairs";

آقای وزیر مختار = P. وزیر صاحب مختار "the Minister Plenipotentiary".—

The word *sāib* is placed after the name or the title of the person addressed (or mentioned) and, as can be seen from these examples, in titles of a composite nature, after the first link of such a compound. Should that word ever be used in that sense in P., it could naturally never be placed in the middle of a compound thus rending asunder a logical complex.—

Other formulæ of assent, besides the above cited, are :

dilat (دلت) = P. میلتن "as you like" or "please yourself" (lit. "thy heart", i.e. "as thy heart wisheth!") —

azār dafa (هزار دفعه) "a thousand times!" (i.e. "with pleasure") is the nearest equivalent of the P. چشم.—

A polite term of denial is :

¹ It is even used when addressing the King.—

² In P. صاحب means "master; owner", and is less used as a form of address.—

xudā mēdāna (خدا میداند) = P. چه عرض کنم "I do'nt know" (lit. "God knows").—

A formula of acceptance of a proposal is :

agar mērbānī bāša (اگر مهربانی باشد) = P. اگر مرحمت بفرمائید "if you are so kind".—

The nearest attempt at constructing a polite sentence on the pattern of the formulæ current in P. is the seldom heard phrase of civil invitation to come in :

taklīf¹ guwārā kunīn (تکلیف گوارا کنید) = P. بفرمائید "please, take the trouble" (lit. "make the trouble palatable").—More often, however, the invitation to step in is expressed in one word by the Imperative of the verb آمدن :

bī'āyīn (بیآئید) "come!"—

The simplest phrase of greeting (after the Islamic formula of salutation has been exchanged) is :

tabī'at² xūb? (طبیعت خوب ؟) = P. "how do you do?" (lit. "health good?").—

The answer to that query is :

śūkur (شکر) = P. الحمد لله "thank (God)!"

Generally, however,—more especially after a parting or when greeting a new arrival—more elaborate formulæ are used, like :

xūbastī jūrastī baxayrastī xūb jūrastī xūb-baxayrastī jūr-xu astī xayr-xu astī mānda nabāšī salāmat bāšī tabī'at xūbas

خوب هستی جور هستی بخیر هستی خوب جور هستی خوب بخیر هستی
جور خود هستی خیر خود هستی مانده نباشی سلامت باشی طبیعت خوبست ؟

i.e. lit. : "art thou well ? art thou fit ? art thou all right ? art thou quite fit ? art thou quite all right ? thou lookest fit ! thou lookest all right ! (I hope) thou art not tired ? good cheer to thee ! Is thy health well ?"—

This string of questions is repeated in a rapid recitative.

In reply, the same gibble-gabble may be poured forth all over again, or the mere word *śūkur* (شکر), already recorded may be used.—

An intimate friend might be greeted on arrival by the formula :

qadamātān mubārak čašmatān rawšan šānayitān dirāz
(قدمتان مبارک چشمتان روشن شأنه تان دراز) "Your feet (be)

¹ For the meaning of *taklīf* (تکلیف) see Vocabulary.—

² For the meaning of *tabī'at* v. Vocabulary.—

lucky! your eyes (be) bright! your shoulders (lit. "shoulder-blade") (be) broad (lit. "long")!!"¹.

A jocular form of greeting of a rather coarse nature between very intimate friends may be sometimes heard:

bi-pūndī bi-tarakī kamarat bi-škanad tu kūr šawī
(پوندي بفرکي کمرت بشکند تو کور شوي)
"Mayest thou swell! mayest thou burst! may thy loins break! mayest thou become blind!" This antiphrastical sentence is probably meant to avert the evil eye or something of the kind.

The formula of taking leave is:

ma ruxsat? (من رخصت) = P. میفرماید or
بنده را مرخص میفرماید (am) I allowed (to leave)?"—
بنده باید مرخص شوم

At parting either the Islamic formula of salutation is pronounced (which is not customary in P.), or else the guest, who is going, says:

ba-amān-i xudā (با امان خدا) or *fī amāni-llāh* (في امان الله)
"to the protection, of God (I entrust thee)!", to which the master of the house replies:

ba-xudā supurdum (ببخدا سپردم) "I entrust (thee) to God!"—

I have heard, however, the sequence of these two formulæ reversed.

The forms of congratulation differ little from those current in P. (i.e. مبارك باشد - مبارکست - جشنان روشن - انشاء الله مبارکست), although the first two appear mostly in the laconic shape of the one word *mubārak* "lucky!", the reply, however, instead of the more elaborate phrases current in P., is merely the brief: *salāmat* (سلامت) "cheer!"

A somewhat more complex sentence is used for congratulation on the *Īdu-l-aẓḥā* ("The Feast of Sacrifice")² commonly called by the Afghans *Īd*³ "The Feast":

īditān mubārak namāz-rūza-tān qabūl dāxil-i ḥājiyā yāziyā
(عیدتان مبارک نماز [و] روزهتان قبول داخل حاجیان غازیان)
"(May) your Feast be lucky! (may) your prayer (and) fast be accepted! (may you) enter (the confraternity of) the pilgrims

¹ The rest of the formula is unprintable.—

² On the 10th of *Zū-l-Ḥijja*.—Called by the Persians *Īd-i qurbān*.—

³ In P. the term *Īd* (عید) is the abbreviation of *Īd-i Nowrūz* "The Festival of the New Year", and is not applied to other festivals without some special qualificative, unless, of course, when loosely used in the general sense of "holiday".—

⁴ With the omission of the conjunction, v. *supra*, p. 41.

(and) champions of the faith!" The reply to it is the usual *salāmat* (سلامت) "cheer!" as above.—

The terms of abuse in K. are so coarse that I am able to cite only very few of them. One thing of general importance must be, however, mentioned, namely, that what has been said with regard to the above discussed polite phrases holds good also for the terms of invective current in K.: they do not coincide with the similar terms in use among Persians, and many of the P. terms of that kind have no exact equivalents in K. and vice-versâ. Thus, for instance, the expression پدر سوخته "one whose father has been burned"¹, so current in P., is altogether unknown in K. As its nearest equivalent might be suggested the K.:

padar-nālāt (with a transposition of the syllables of the second link of the compound, instead of پدر لعنت), pronounced often in rapid speech in the heat of an altercation as *pālāt*, whatever its meaning². This expression, on the other hand, is entirely foreign to P.³

Nor does one hear in K. the so current P. terms of invective پدر سنگ - مادر قعبه - جاکش - قورامساق etc. The P. *نا مرد* (lit. "unmanly") appears in K. in the softened form of a diminutive:

*nā mardak*⁴.

The P. دیوث "contented cuckold" appears in K. in the slightly mutilated form *dawūs*⁵.

Where in P. the verb دیدن "c a c a r e" is used in invective in combination with the words ریش "beard", سر "head", کله "skull", قبر "grave", etc., K. uses the composite verb *guh kardan*, and the current expression (heard almost exclusively from the lips of the fair sex) is:

¹ That expression was obviously coined by the troops of Nādir-Shāh during the latter's Indian campaign (1737-39), when the Persians met with the—from their point of view—horrid proceeding of burning the corpses of the dead.—

² It might mean "one cursed by his own father", or (and more probably) "one whose father be accursed".—

³ The word لعنت in P. is, to my knowledge, used in current colloquial only in two combinations: (1) when abusing some absent person خدا لعنتش کند "may God curse him!" (2) as a kind of oath in the expression بر دروغ گو لعنت "on the liar, be curse!", i.e. "may I be damned, if I am lying!"—

⁴ v. Vocabulary, s. v.

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da dānat guh mēkunum (در دانت گه میکنم)¹.

Passing under silence other K. terms of abuse, I may in conclusion say a few words about the more current polite turns of phrase as used in writing (OL).

These also are widely different from the P. forms used in correspondence and do not in any way cover the latter.

A letter in K. either begins *ex abrupto*, or (in unofficial and semi-official instances) it is introduced by some kind of summary address like : دوست عزیز من - "My dear friend!"²

The beginning of an official letter is :

با کمال احترام باستحضار... میرساند = P. شرف اطلاعاتی³ دارد
"has the honour to inform"⁴.—

The concluding phrase of a letter in K. is always very brief :

در خاتمه احترام "in conclusion—respect", or

با احترامات لازمه "with the necessary (!) respects", or

احترامات لازمه را بپذیرید "accept the necessary respects".—

I abstain here for considerations of space from citing any possible P. equivalents for these sentences, but may mention that these abrupt phrases are essentially un-Persian and seem to have been constructed on the pattern of the sober E. terminations of letters. It may be also noted that such phrases are only found in Afghan official letters addressed to foreigners. The usual formula of concluding an official letter amongst the Afghans themselves is the word *نقطه* "only"⁵.

The P. formulæ for the termination of letters : زیاده رحمت
" (to say) more (would be to) trouble", and زیاده رحمت نمیدهد
"I won't give you any more trouble", not to speak of the more elaborate concluding phrases, seem to be entirely unknown in K.

¹ The verb کردن ought probably to be disconnected here from the noun and not considered as auxiliary, but rather as an independent active verb, meaning "to put", so that the whole sentence might be freely translated as : "I fill thy mouth with excrements!"—

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Persia): تصدقت کردم - قربانت شوم - روجی فدایت - فدایت شوم -
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which Geiger¹ so appropriately calls "eine locale Entartung der Schriftsprache". A similar "locally decayed" variety of Persian is also the language of Afghanistan. More than that, I maintain that these two languages are essentially and originally identical and that any differentiation of these two languages must have occurred at a quite recent epoch. We may take it that, roughly speaking, up to the rise of the Barakzay dynasty (1826) there has never been any actual isolation of Afghanistan from the rest of the vast tract of land between Samarqand and Bukhara, on one side, and Kashmir and the Punjab, on the other (including, besides Afghanistan, Khiva, Khoqand, Kashghar, Khorasan and Seistan), and that the Persian language used throughout the whole expanse of that area must have been more or less uniform.

If we judge by the texts of the histories of Muḥammad Amīn Bukhārī² and 'Abdul Karīm Bukhārī³, who wrote respectively in the second half of the XVIIIth and at the beginning of the XIXth century, we can see that the language of these two texts is essentially the same as the present-day language of Afghanistan,⁴ making allowance for the influences that have been at play during the last hundred years.

The actual isolation of Afghanistan, as has been said, begins with the second quarter of the XIX century, and we may take that henceforward and up to 1919 the possible influence of literary Persian and P. on the language used in Afghanistan is extremely weakened, the influence of the Persian of Turkestan (Tājīkī) must have stopped from that moment altogether, and of all outside influences perhaps only that of Hindustani could have been at play, although certainly considerably weakened, as compared with the preceding

¹ Grdr. d. iran. Phil., vol. I, p. 407.—

² Teufel, o.c. The work of Muḥammad Amīn is the individual history of the reign of 'Ubaydullāh Khan II of the Jāfid dynasty (1751-1753 A.D.).—

³ Schefer, o.c. The History of 'Abdul-Karīm comprises events which took place in Afghanistan, Bukhara, Khiva, and Khoqand for the period from 1740 to 1818 A.D.

⁴ A few days before my departure from Kabul early in November 1927, His Highness Sayyid 'Alim Khan, the ex-Amīr of Bukhārā, honoured me by lending me for perusal a manuscript of his autobiography entitled *حزن الملل بخارا*, just completed by him at that moment. As the manuscript was to be sent a few days later to Paris for translation and publication, and I myself was extremely busy with getting ready for my journey, I was unable to avail myself fully of that unique opportunity of comparing my notes on Kābulī with the language of the manuscript in question. A cursory perusal of its contents showed me, however, the correctness of my conjecture of the close relationship existing between K. and the Tājīkī of Bukhārā: barring a few deviations and local peculiarities, the language of the Ms. was to all purposes the same as that of K. books and documents that had come to my notice.

centuries. So that, for the last century, Afghanistan, as regards its language, was to all purposes left to its own resources. During that last century, however, the standard colloquial of Persia completed a considerable evolution culminating in its final present day's expression, which is known in Afghanistan and in the far-away Caspian provinces¹ of Persia, as *Qājārī* from the dynasty of that name.

As already mentioned², there is no strict distinction in Afghanistan between the colloquial and the literary language, as there is no literature in Afghanistan to speak of. I have, therefore, compared in the Vocabulary that follows the K. words with their equivalents in Modern Colloquial (standard) Persian, giving always³ first the P. equivalent and then the English meaning of the K. word. The P. equivalents introduced here have all been carefully checked by me with my Persian friends in Kabul⁴, who often even gave me K. words heard (or seen in writing) by them, which were then naturally verified by me through my Afghan acquaintances, before being incorporated in my stock of K. words.

I hope, therefore, that any possible mistake in that direction has thus been very much minimized.

The Vocabulary contains about eight hundred and fifty K. words⁵, which are given in transcription in Latin characters. To express چ is used *č*, for خ is used *x*, for ج is used *ž*, for س is used *š*, for غ is used the Greek γ . No difference is made between ح and ه both expressed by *h*, nor between

¹ I heard on my arrival in Afghanistan in 1923 my own Persian referred to as "*Qājārī*" by the natives ("*Qājārī gap mēzanīn*") and this also happened to me repeatedly in Gilān and Māzandarān in 1914-1915. I cannot say whether standard Persian bears that name in other out-of-the-way provinces of Persia, but it is more than probable, as the Persians themselves are keenly aware of the local peculiarities of speech, so often derided by the inhabitants of the capital and the adjoining districts.—

² v. Introduction, p. 2.

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⁴ Members of the Persian Legation and the Persian teachers attached to the Amāniyya School of Kabul, more especially Mr. A. H. Ardjmand (whose work I had already occasion to mention in my article on "The Afghan Weights and Measures" J.A.S.B., 1928), whose unremitting help in the checking of the P. equivalents of my Vocabulary has been invaluable to me.

⁵ The number of words in the Vocabulary might have probably been slightly increased by careful perusal of all the Afghan printed books and periodicals in my possession, but that would have considerably delayed the publication of the present sketch. I, therefore, contented myself with the number of words across which I had come in actual life during my four years' stay at Kabul.—

ذ - ز - ض - ظ all of them expressed by *z*, nor between س and ص both expressed by simple *s*, nor between ت and ث for which there stands everywhere a simple *t*. In brackets, the same word is repeated in Arabic characters. The P. words are given only in A characters, except in cases where the word in K. and P. is identical, but merely differently pronounced.

Wherever possible, examples of sentences or expressions, in which the word occurs, have been given under the respective heading and the origin of such a sentence has been marked, as mentioned in the Introduction ¹.

The text of the history of 'A b d u l - K a r i m ² and the part of the history of Muḥammad A m i n accessible to me ³ have been carefully perused and all peculiarities in the language of the same (Tājīkī) coinciding with those noticed by me in Kābulī have been recorded under the corresponding headings in the Vocabulary.

¹ p. 2.

² Schefer's edition.—

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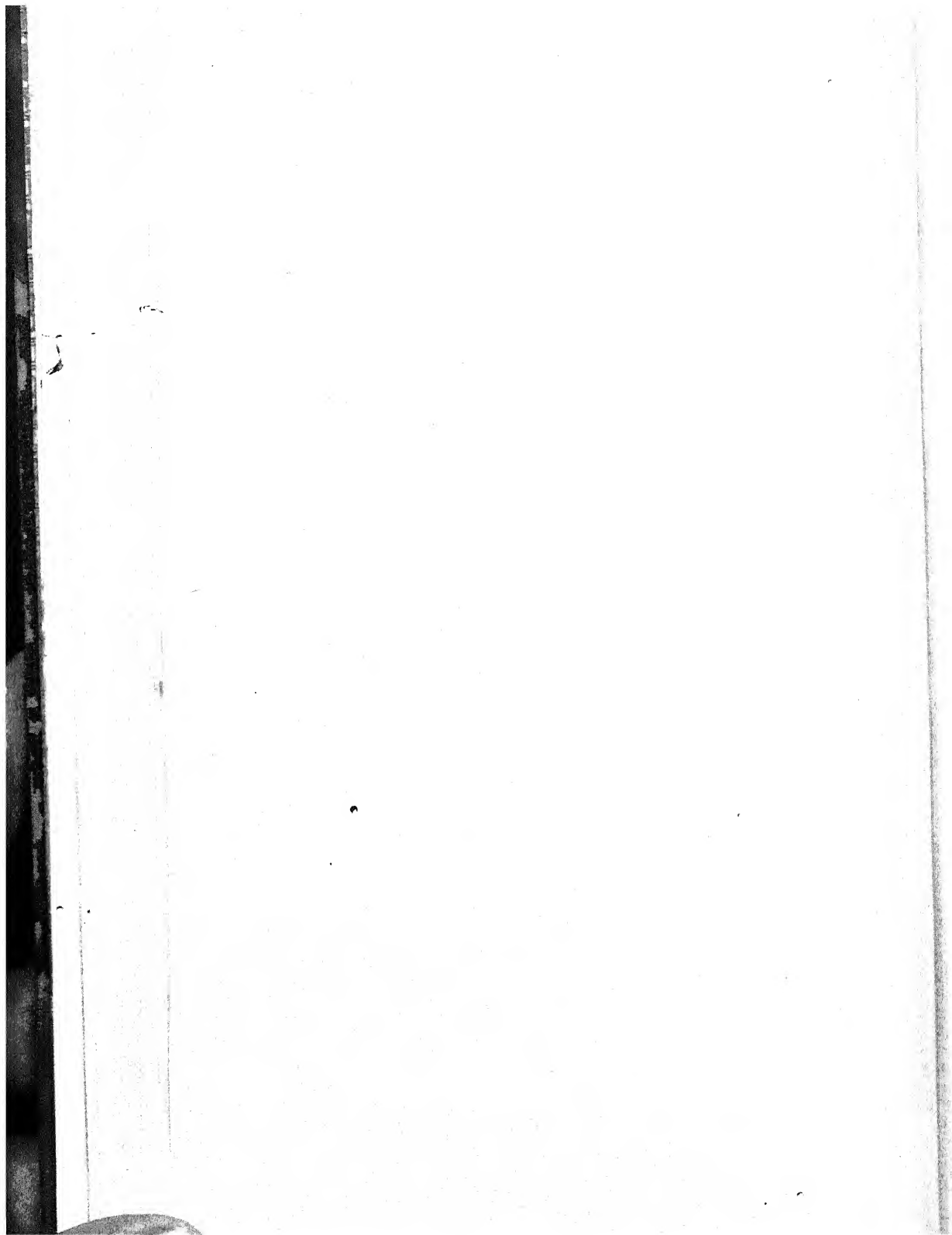
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VOCABULARY.

Abbreviations

- A. =Arabic¹
 A.A. =Amān-i Afghān
 A.I. =Anglo-Indian
 Aw. =Awestan
Bianchi =J. D. Kieffer and T. X. Bianchi. Dictionnaire Turc-Français, etc. Paris. 1835-37.
BrDial. =E. G. Browne. Some Notes on the Poetry of the Persian Dialects. JRAS, 1895.
BrYear. =E. G. Browne. A Year Amongst the Persians. London. 1893.
 C. =The Afghan Custom Regulations
 E. =English
 F. =French
Fallon. =A New Hindustani-English Dictionary, etc., by S. W. Fallon. Benares. 1879.
Geig. =W. Geiger. Kleinere Dialekte and Dialektgruppen (Grdr. d. iran. Phil. I. 2. pp. 287-423).
 H. =Hindustani²
Hobson-Jobson =Hobson-Jobson. A Glossary of Colloquial Anglo-Indian words, etc., by H. Yule and A. C. Burnell, London. 1903.
Horn =P. Horn. Neupersische Schriftsprache (Grdr. d. iran. Phil. I. 2. pp. 1-200).
HoutSch. =A. Houtum-Schindler. Beiträge zum kurdischen Wortschatze ZDMG, XXXVIII, 1884.
IvBirj. =W. Ivanow. Persian as spoken in Birjand. JASB, XXIV, 1928.
IvKurd. =W. Ivanow. Notes on Khorasani Kurdish. JASB, XXIII, 1927.
IvRust. =W. Ivanow. Rustic Poetry in the Dialect of Khorasan. JASB, XXI, 1925.
IvTab. =W. Ivanow. Tabaqat of Ansari in the Old Language of Herat. JRAS, 1923.
 K. =Kābuli
LorPhon. =D. L. R. Lorimer. The Phonology of the Bakhtiari, Badakhshani, and Madaglashti Dialects of Modern Persian. With Vocabularies. RAS. Prize Publication Fund. 1922³.
LorPsht. =D. L. R. Lorimer. Pashtu. Part I. Oxford. 1915.
 LSI. =Linguistic Survey of India.
MorgFront. =G. Morgenstierne. Indo-Iranian Frontier Languages. I, Parachi and Ormuri. Oslo. 1929.

¹ Arabic words current in K. or P. are not specially marked as such in the Vocabulary, and the mark A. is used only when, for the sake of comparison, some originally Arabic form is quoted.—

² The mark H. in the Vocabulary does not necessarily imply that the word is Indian in its origin: it merely means that it is Indian in its use, that is to say, that the word so marked (very often a Persian one, but obsolete) occurs no more in P., but is found in that form in Hindustani from which it might have been borrowed into K. or (more probably) vice-versâ.—

³ Only the "Badakhshani and Madaglashti" part of it has been taken into consideration in the course of the present sketch.—

- MorgRep.* =G. Morgenstierne. Report on a Linguistic Mission to Afghanistan. Oslo 1926.
MorgShugh. =G. Morgenstierne. Notes on Shughni. Norsk Tidsskrift for Sprogvidenskap. Bind I. 1928.
MorgTexts =G. Morgenstierne. Persian Texts from Afghanistan. Ex Actorum Orientalium volumine VI excerptum.
MorgVoc. =G. Morgenstierne. An Etymological Vocabulary of Pashto. Oslo. 1927.
MP. =Middle-Persian.
obs. =obsolete.
P. =Standard Colloquial Persian.
Pāz. =Pāzand.
Phillott =D. C. Phillott. Colloquial English-Persian Dictionary, etc. Calcutta, 1914.
Platts =John T. Platts. A Dictionary of Urdū, Classical Hindī, and English. London. 1911.
Port. =Portuguese.
Psh. =Pashtu¹.
R. =Russian¹.
Raverty =H. G. Raverty. A Dictionary of the Pukhto, Pushto or Language of the Afghans, etc., London, 1867.
Salemann =C. Salemann. Mittelpersisch (Grdr. d. iran. Phil. I. 1. pp. 249-332).
Socin =A. Socin. Die Sprache d. Kurden (Grdr. d. iranischen Phil. I. 2. pp. 249-286).
Skr. =Sanskrit
Steingass =F. Steingass. A Comprehensive Persian-English Dictionary, etc., London.
T. =Turkish¹
T. (with a figure after it)=F. Teufel. Quellenstudien zur neueren Geschichte der Chānāte. ZDMG, XXXVIII, 1884.
Tāj. =The Tājiki of Bukhārā
v. =vide; see.
Vaughan =Vaughan. A Grammar and Vocabulary of the Pushtu Language. Calcutta. 1901.
vulg. =vulgar.

¹ These marks are not meant to imply that the word so designated is necessarily Turkish, or Pashtu, or Russian, etc.—they merely indicate in which language the K. word occurs in the same or similar meaning or form.

Vocabulary

A

aban wa jaddan (أباً و جدّاً) = P. *abā 'an jadd* (ابا عن جد) from generation to generation.—cf. also *أجداد* T. 328 l. 29; 371 l. 7. 'A b d u l - K a r ī m has several instances of analogous expressions:—

p. 82 l. 14 *عن ابناء اجداد مال مسلمانها را يغما و تاراج ميکردند*
adrak (ادرک) H. = P. *زنجفیل - زنجفیل* ginger.—cf. Skr. *ādraka*.

But 'A b d u l - K a r ī m p. 4 l. 15 *زنجبیل*—

afsar (افسر) E. = P. *ماحب منصب* military officer.—A curious kind of popular etymology is felt in this word, probably connected in the thought of the population with P. *افسر* "crown".—

aftāndan, aftīdan (افتیدن - افتادن) = P. *uftādan* (افتادن) to fall.—
aftīdan v. the preceding: *aftīdum da daryā* (افتیدم در دریا) "I fell into the river".—cf. also I v B i r j. No. 129 p. 305 "*eftīdāyūm*".—

cf. also *Divān-i Shams-i Tabrizī* (Nawal Kishore edition) p. 202 l. 4: (وز شاخ درخت تو چنین خام فتیدیم).

afyūn (افیون) H. = P. *مسلک افیون* opium: AA. *مسئلۃ مہلک افیون* "the question of the dangers of opium" (lit. "the dangerous question of opium"). The word is obsolete in P. It must have been borrowed from Greek *ὄπιον* by the Arabs, was introduced by them into Persian, and came thence into H., where the word can hardly be directly derived from Skr. *aphēna*, as dictionaries would like us to believe.—
cf. also 'A b d u l - K a r ī m p. 28 l. 10: *از نشئت افیون بهر* "he was under the influence of the opium-drug".

aylaban (AA. اغلباً) = P. *اغلب* or غالباً mostly.—

ajant (AA. اجنت) E. = P. *آگنت* R. agent (of a commercial firm, a bank, etc.). Not to be confused with the P. *آژان* F. which means "a policeman".—

alaktrīkī (الکتریکی) = P. *چراغ برقی* electric:—*چراغ الکتریکی* = P. *چراغ برقی* electric lamp".—

alāwatan (OL. علاوة) = P. *بر علاوة* or *بر این* besides; in addition to it.—v. A d v e r b s in the Introduction.—

alāyda (عليده) = P. *alāhida*, vulg. also *alāhidda*; i.e. *alāhida* > *alā'ida* > *alāyda*. v. chapter on "Pronunciation" in the Introduction. cf. *LorPhon.* p. 167 (in the specimen-texts, but omitted in his vocabulary): B. *aloi.id*; cf. also *MorgFront.* 233a, where a case of an extraordinary spelling *الاهدى* (*sic*) is recorded.

alīqīn (؟.....) E. = P. فانوس lantern.—From the E. "hurricane [lantern]", but probably connected in popular thought with A. عليق "suspended; hanging". Hence the hard -q- sound.

altāyī (C. التائي) T. = P. روباه سياه black fox (skin).—

alwān (الوارن) = P. شله chintz; calico: *alwān-i surx* (C.) "red chintz".—

alwārī (الواری) } = P. دولابچه wardrobe; cupboard. From H.
anwārī (انواری) }

almārī "almyrah", cf. *Hobson-Jobson*, s.v.

ama waqta (همه وقتہ) = P. متصل—متداول continually.—

ambūr (انبور) = P. گاز nippers, pincers. cf. *ātašgīr* and *palās*.—

amčī (AA. همچه) = P. همچنين such, suchlike.—

amman qarīb (AA. عما قريب) = P. عنقریب ('*anqarīb*) approximately.—

amrā[h]-i (همراه) = P. با with:

AA. قرارداد افغانستان آلمان "the agreement of the German Company with Afghanistan." Even *amrā[h]-i bā* in the same meaning: *amrā[h]-i bā pansil binawīs* "write with a pencil!"—Synonym *kat-i*, q.v.

anarjī (انرجی) E. or F. = P. جد و جهد energy: AA. قهر و انرجی او "his authority and energy".—

andīwālī (اندیوالی) = P. مشارکت or شراکت partnership; messing together.—From Psht. اندیوالی, which seems to be a corruption of P. همدیواری "neighbourship" (lit. "sharing the same wall"). Constructed with the verb انداختن: *andīwālī andāxtan* (اندیوالی انداختن) = P. شریک شدن "to become partners; to start messing together". cf. also *Morg. Front.* 234b.

angāštan (انگاشتن) obs. = P. محسوب کردن to think; to consider; to estimate.—

antrīg (انتریگ) E. = P. intrigue.—

anwārī v. *alwārī*.

apran, apram (اپرن - اپرم) E. = P. پیش بند apron.—

aprīl (اپریل) E. = P. آوریل F. April.—

apriš (AA. اپریش) } E. = P. عمل دست - عمل جراحی operation
aprišan (اپریشن) } (surgical).—

apt (هفت) = P. هفت (*haft*) seven

apda (هفده) = P. هفده (*hivdah*, thus in spite of Steingass' " *haḏdah* " q.v.) seventeen.—

aptāt (هفتاد) = P. هفتاد (*haftād*) seventy.

ar (هر) used with a negation = P. هیچ no; none: AA. در هر "and on no occasion has she (the Queen) abstained from showing her motherly kindness".

arākīn (AA. اراکین) = P. ارکان chiefs, grandees.—The word is an A. broken-plural form from its P. equivalent which in itself is a plural from A. رکن "pillar".—

arbāb (ارباب) = P. ارباب chief of village.—cf. also *qaryadār*.

In P. ارباب (plur. fr. A. رب "lord") means "master" and with regard to a village "the owner; a landowner, a squire".—

arča (?.....) = P.....? a kind of tree and wood similar to the plane. W. Ivanow was so kind as to suggest (by letter) that it might be a provincial pronunciation of the word الوچه "plum-tree", which he himself has often heard thus called in Khorasan. That cannot, however, be thought of here, as the planks of that tree (which were said to be brought from Badakhshan) were about 12-14 ins. wide and were used for carpenter work.—

ar dūš, ar dūyīšān (هر دوشان - هر دوش) = P. هر دوتاش both of them.—

arhat (ارهت) = P. چاه a well.—Borrowed from Psht. ارهت *arhatt* "a well with a Persian wheel for drawing water" (Raverty).

askar (اسکر) T. = P. سرباز soldier.—The word is chiefly used by Turkish speaking peoples and is obsolete in P. It occurs many times in 'Abdul-Karīm's text: p. 14 l. 15; p. 16 l. 19; p. 18 ll. 10, 11; p. 20 ll. 6, 9, 15, 17, 22; p. 24 ll. 2, 15; p. 26 l. 13, etc. I find it only once in Teufel,

and that as a part of a compound-title: قاضي عسكر
p. 347 l. 12-13 (note).

aspār (اسپار) = P. گاو آهن a plough.—Whether meaning “horse-propelled”?

ašt (هشت) = P. هشت (*hašt*) eight.—

aštāt (هشتاد) = P. هشتاد (*haštād*) eighty.—

ažda (هژده) = P. هجده - هژده (*hiždah—hijdah* in spite of Steingass’ “*hajdah*” and “*hazdah*”, q.v.).—

atan (اتن) Psht. = P. رقص dance.—From Psht. اتنر v. Raverty, s.v.

atīq (عتيق) } = P. رتبه‌های جدید و عتیقه عسکری
atīqa (عتیقه) } = P. قدیم old : NN. عتیقه عسکری

“the new and the old military ranks”;

AA. عتیقه خیال = P. قدیمی خیال “old-minded; conservative”.—

The word means in A. “free; noble; of old (i.e. noble) descent; thoroughbred (of horses); old (i.e. “venerable”: بیت العتیق “the old house”, i.e. “the temple of Mecca”), but is never used in P. as an antonym of “new” in the ordinary sense of the word.—

atīqajāt (عتیقه‌جات) = P. آثار قدیمه antiquities.—Plural of the preceding. I have never heard that A. word used colloquially in Persia in that sense. The somewhat similar in sound and meaning P. انتیک (F. “antique”) is also never used in its original F. sense, but means only “fine, elegant, stylish”, etc.

aw (هو - هاو ؟) = P. ای - اهی ahoy! oh!:

aw bigā = P. بیا های “come!” (when calling a servant);

aw bača = P. بچه‌ها های (unless the same های is concealed here) “boy!”—

awābāz (هوا باز) = P. هوا پیم airman.—Of recent formation on the pattern of *āwbāz* q.v.

awāxurī (هوا خوری) = P. گردش outing; going for a walk.—Probably under the influence of H.

awgār (افگار) = P. زخم - اذیت hurt; wound. cf. also I vT a b. 373.

azārdāfa (هزار دفعه) = P. چشم with pleasure; certainly. v. Introduction, p. 43.

az pēš raftan (از پیش رفتن) = P. پیشرفت کردن to advance, to prosper :

AA. کار اوشان از پیش می نرود (*kār-i ūšān az pēš mīnarawa*)
“their affairs do not prosper”.—

ābād (آباد) = P. well-fed : AA. گاو و مرکب را آباد و فربه نگاهداشته (*kāw-o morkab rā ābād-o ferebe negahdashte*)
“keeping the cows and asses well fed and fat”.— I find in ‘Abdul-Karīm’s text : سنگ آباد = “precious stone”
p. 36 l. 2.—In P. آباد means only “cultivated; well-ordered” (of land, gardens, cities, etc.).—

ādam (آدم) = P. شخص - مرد man; person: *kudām ādam āmada* = P. یک شخصی آمده “a person has come”. Although the word is known and sometimes used (in the meaning of “servant”, “employee”: آدم مشیر الدله “a servant of M.-D.”) in P. not only as the name of the biblical Adam, still its use is not current in P. in the general sense of “man”.—The word must have been introduced in K. under some foreign, probably T., influence, seemingly in earlier times, as we find it in H. as well.

āftāwras, āwtāwras (آفتاب رس) = P. طلوع آفتاب sunrise. cf. also LorPhon. pp. 174a, 190a.

āgist (آگست) E. = P. اوت (F.) August.

āhīn (آهن) = P. آهن iron. For the ī cf. Salemann p. 264 § 23; Socin p. 258 § 31; also HoutSch. p. 48.

ālīš (آلیش) T. = P. عوض - معاوضه - مبادله exchange, barter. Constructed with کردن.—

āmadāt (آمادات) = P. پیش آمدها happenings: OL. که اینطور آمدها “so that such happenings should not occur again”.—

ānā (اعنی) = P. یعنی (*ya’nī*) that is to say; i.e.—Though good A. in itself, this form of the word is never used in P.—

āsta (آهسته) = P. یواش (more seldom) آهسته (*āhista*) slowly; gently.—Occurs in ‘Abdul-Karīm’s text p. 109 l. 10.

āstriyā (استریا) E. = P. آتریش (F.) Austria.—

āt (عهد) = P. عهد (*‘ahd*) agreement.—cf. also *šāt, estāt*, etc.—

ātašgīr (آتشگیر) = P. انبور tongs. cf. *ambūr*.—

āti (آتی) = P. ذیل the following.—In P. آتی means only “future, to come”.—Very current in AA., MA., OL., etc.—

āwāl dādan (احوال دادن) = P. اطلاع دادن - خبر دادن to inform.—

āwbāz (آب باز) = P. شناگر - swimmer.—

āwbāzi (آب بازی) = P. شنا - swimming.—

āwraw (آب رو) = P. آب جری a stream, a ditch (with water). cf.

I v Rust. 256.—

āwriz (آب ریز) = P. مبال (vulg. موال) - latrine, lavatory.—

āwlāwras v. *āftāwras*.

āyīna (آئینه) = P. شیشه پنجره window-pane.—In P. آئینه means only “mirror, looking-glass”.—Yet even in K. “a glazier” is called *šīšabur* (شیشه بر), as in P.—

āyīna-xāna (آئینه خانه) means in K. “a glass-veranda”, whereas in P. the same word is used to denote a room with walls and ceiling consisting of mirrors (Germ. “Spiegelzimmer”).—

B

bābar (ببر) = P. شیر (*šīr*) lion.—In P. ببر (*babr*) means “tiger”.—

bačča (بچه) = P. پسر son:

OL. غلام احمد خان بچہ سپہسالار “Ghulām-Aḥmad Khan, the son of the Commander-in-Chief”.—

Also in Tāj.: ‘Abdul-Karīm has got p. 68 l. 16 زن و بچه های عمر بی (Schefer, translation p. 155:) “la femme et les enfants d’Omer Bi”;—p. 70 l. 8 زن و بچه های آنهارا (Schefer translates p. 158 and, I think, wrongly) “les femmes et les enfants en bas âge”.—

badraqa (بدرقه) = P. قراقران escort:

mā imsāl bā badraqa āmadīm “we travelled this year with an escort”.—In Tājīkī بدرقه seems to have rather the sense of “banishment, deportation”. Thus in ‘Abdul-Karīm’s text: از بخارا بدرقه کرد p. 63 l. 11 “he banished him from Bukhara” (Schefer p. 144: “celui-ci l’exila de Bokhara”); p. 101 l. 19/20 یا اینکه از ملک بدرقه کن (Schefer, translation, p. 227) “exile-le”.—

The word *badraqa* is, however, used in P. only in the sense of “seeing off; accompanying (a friend for the first stage of a journey)”, cf., for instance, BrYear 158.—

bagī (بگی) H. = P. دو چرخه buggy.—

- The etymology and even the origin of the word seem to be unknown. Probably H. cf. Hobson-Jobson, s.v.
- bayna* (بغنه) = P. پوست بره تودلی skin of a dead-born lamb; morling.—
- ba-īntaraf* (با ینطرف) = P. قبل before; ago: AA. از یک ماه باینطرف “a month ago”.—
- ba-kār* (بکار) = P. لازم necessary.—Also:
- ba-kār būdan* (بکار بودن) = P. لازم بودن to be necessary;
- ba-kār dāštan* (بکار داشتن) = P. لازم داشتن to need:
- marā ba-kār-as*
ma ba-kār dārum } “I need it”.
- baja* (بجه) H. = P. ساعت hour:
- panj baja* (پنج بجه) = P. ساعت پنج “[at] five o'clock”; sometimes also:
- ba-sāt-i panj baja* (بساعت پنج بجه), or:
- OL. *ba-amāl-i du baja* (باعمل دو بجه) “at two o'clock”.—
- baks* (بکس) E. = P. کیف همیان - purse; wallet; bag. —From E. “box”.—
- bamba* (بنبه) Port. = P. ماشین - شیر a pump; a water-tap; an engine; a railway-engine.—From Port. “pompa” through the medium of H. cf. Platt’s بمبا.
- bandī* (بندی) = P. زندانی - حبسی prisoner, convict.—‘Abdul-Karīm, p. 74 l. 17 has got بندیان را.—
- band kardan* (بند کردن) = P. بستن to close, to shut: *darwāza band ku* = P. ببند [را] “shut the door!” Probably under the influence of H. بندها etc. cf. also *basta kardan*.
- band šudan* (بند شدن) = P. گرفتن to take (speaking of fire). syn. *časpīdan*.
- bandubast* (بندوبست) H. = P. قرار داد - قرار arrangement, agreement.—Not used in P. and probably never was.—
- bank* (بنک) E. = P. بانک F. bank.—
- bar* (بر) obs. = P. عرض width, breadth.—Is also used in P., but less often, and might be considered both obs. and vulg.
- baranda* (برنده) H. = P. دالان veranda. (The P. equivalent was suggested to me by W. Ivanow.) For the origin of the word and the various hypotheses regarding the same v. Hobson-Jobson, 964b-966a.—
- barča* (برچه) H. = P. نیر spear.—

barjasta (بر جسنه) H. = P. ممتاز - شایان prominent; excellent, superior, distinguished: AA. خدمات برجسته "distinguished services". Platts gives, however, for that H. word entirely different meanings, v.s.v.

barqīwālā (برقی والا) H. = P. منتور F.-R. electrician.—For the suff. *wālā* v. Introduction, p. 17.

barsāti (برساتی) H. = P. پالتوی بارانی raincoat, mackintosh, waterproof.—From H. برسات *barsāt* "the rainy season".

barzafšānī (برزافشانی) = P. کاشتن sowing.—

ba-sar āmadan (بسر آمدن) o b s. = P. منقضی شدن to come to end; to end.—

basta āmadan (بسته آمدن) = P. منعقد شدن to be concluded: AA. یکت معاهدهء معاونت و تأمینات بسته آمده است "a treaty of mutual assistance and security was concluded".—

basta kardan (بسته کردن) = P. بستن to shut, to close. v. Introduction p. 28. syn. *band kardan*.—

ba-šumar raftan (بشمار رفتن) = P. محسوب شدن to be counted as, considered as.—

ba-xātir-i az (بخاطر از) = P. در خصوص regarding; concerning; with reference to.—

baxš, *baxša* (بخش - بخشه) = P. بواسطه - برای for: *baxšitān* (the short -i- being probably an *izāfa*, cf. the chapter on Pronouns in the Introduction) = برایتان شما - بواسطه (or واسه شما) "for you".—

baxšīš (بخشش) H. = P. انعام tip, gratuity.—In P. بخشش, though hardly ever used, means "a gift" (from a superior), تقدیم being the term for "a present, an offering" (from a subordinate). Both these P. words denote presents in kind, whereas in K. *baxšīš* is used, as in H. and also in T., to denote a monetary retribution for slight services supposed to be rendered by subordinates.—cf. for it the most lucid excursus in BrY e a r pp. 68-69, on the different expressions used in P. in the sense of "presents".—

baxšūdan (بخشودن) = P. بخشیدن to give, to grant:

برایما (sic) جز به ذلت از چین خارج شدن دیگر نتیجه نخواهد AA. بخشود "no other issue can present itself to us, but to leave China with shame".—

In P. بخشودن means "to forgive, to pardon".—

bay (بی) T. = P. بیک *bey*: AA. عظمی بی - جمال بی etc.

bayn (بین) = P. در - تو - اندر. — In P. بین means "between". One might be inclined to think that, after all, the K. expression is not at all the A. بین but might be one of those rare Huzvarishn words (like *gabra*—گبر) which have somehow leaked through into Persian from Pahlavi: in fact the MP. ideogram *dayen* (trad.) or *bāén* also means "in, inside" not "between" and has for its Pāz. equivalent *andar*.—

baytu-l-xalā (بيت الخلا) T. = P. مستراح lavatory; syn. *āwriṣ*, q.v.

bābā (بابا) = P. پدر father: *ī bābāš-as* "that is his father". In P. the word is used caressingly by children when addressing the father (or jocosely by parents when speaking to small children, or also as a term of contempt when talking to a subordinate) and corresponds rather to the E. "dad, daddy".—HoutSch p. 51 gives also *bābā* "Vater", as "Dialect von Sô, einem Dorfe zwischen Ispahân and Kaschân."—The word *padar* is, however, also current in K.—

bābū yaryarī,—*yaryarū* (بابا غرغری - غرغرو) = P. رعد thunder. Prob. fr. the Psh. verb *yarēdal* "to thunder", although there also exists a P. verb *gurīdan* (غریدن) of the same meaning. All these words are anyhow onomatopoeic.—

bābā kalān v. *padar kalān*

bādamjān-i rūmī (بادنجان رومی) = P. گوجهٔ فرنگی tomato.—The word *بادنجان* means both in K. and in P. "egg-plant" and is seemingly a corruption of the A. (بيض الجان) (sing. بيضة الجان) "eggs of the genii", one would say in E. "devil's eggs".—

bādār (بادار) = P. صاحب-ارباب master, employer.—Probably = بازدار "one who provides for; a bread-giver" (lit. "supporter"). cf. IvBirj. p. 301, No. 111; p. 304 No. 125 etc. and in his Vocabulary pp. 338, 343, given as *bodor*, *wodor*. The form with initial *w*- has not come to my notice in K. cf. also MorgFront. p. 389a (in Ormuri).—

bādrang (بادرننگ) H. = P. خیار cucumber.—In P. بادرنگ means only "grape-fruit".

bālāpūš (بالا پوش) = P. پالتو F. overcoat.—Probably a translation or imitation of the E. term. In H. بالا پوش means "coverlet, quilt" (Platts), but it might have been

borrowed (one way or the other) and misapplied or differently applied in the two languages. syn. *dubalkōt*, q.v.

bālīšt v. *bilist*

bāmb (؟.....) = P. بام roof. LorPhon pp. 184a and 200b. respectively gives, however, *bāng*, *bāng* and *bām* for B d k h s h. and *bōm*, *būm* for M d g.

bāntī (بانتي) H. = P. آب پاش watering-can.—Borrowed obviously fr. H. *bālī* “a bucket, a pail”. Seems to come from the Port. “balde”, v. Hobson-Jobson, s.v.

bāqa (باغه) = P. قباغه frog.—cf. I v T a b. p. 11 note, where obviously the same word is recorded with another spelling بگ v. also I v B i r j. p. 338; MorgFront 240 b.

bāšanda (باشنده) = P. متوقف established, living, staying: OL. *bāšanda-yi Hindūstān* “[so and so] who is living in India”.—

bāysikal (بایسکل) E. = P. دو چرخه bicycle.—

bāzgašt (باز گشت) = P. بر گشتن or مراجعت return: باز رفتن و رفتن “for going and returning (Afghan visa on passports).—

behbūd (AA. بهبود) H. = P. بهبود well-being.—Both forms of the word are used in H. in the same meaning, but the shorter form is not used in P.

bēd (بيد) = P. بيد (*bīd*) willow.—

bēgāh v. *bīgāh*

bē'i (بهي) = P. به (*bih*) quince.—We find, however, that form in older literary Persian, e.g., in the *Shāhnāma*: می آورد و نار (Vullers-Landauer vol. III. p. 2) “she brought wine, pomegranates, oranges and quince”.—

bēl (بیل) = P. بیل (*bīl*) shovel.—

bētar (بهتر) = P. بهتر (*bīhtar*) better. Also:

bēlartar (بهتر تر) in the same meaning.—

bidūn-i [az] (بدون [از]) = P. بغیر از or باستثنای besides; except: AA. نهالهای بدون بید را (*nālhā-i bidūn-i bēd-rā*) “saplings except those of willow”. cf. also 'A b d u l - K a r i m's text, p. 84 l. 5: “Bukhara is the nearest (foreign) country” (lit. “except Bukhara there is no country near”).—

biland (بلند) = P. بلند (*buland*) high.—cf. MorgFront. (Par). 241a *be'land*; I v B i r j. p. 301 No. 113 *belānde*. But

LorPhon. p. 185a *buland* and 201a *būland* (the first probably a mistake altogether, and the second an inaccuracy). Steingass gives for it the incredible pronunciation *baland*.—

bilist, *bālišť* (بالشت - بلیست) = P. وجب span.—Probably H., cf. my “Afghan Weights and Measures”, JASB. vol. XXIV, 1928, No. 4, p. 421.—

bi-l-kull (با لکل) = P. بکلی wholly, completely.—

bill (بل) E. = P. صورت حساب bill.—

birtāniya (برطانیه) H. = P. انگلیس Britain, England.—

bis-yārtar (بسیار تر) = P. بیشتر more.—cf. *bētartar*.

bišqāb (بشقاب) = P. بشقاب (*bušqāb*) plate.—

bīda (بیده) = P. یونجه hay.—Phillott gives: “Hay *bīda* (dried lucerne); *yunja* (sic) green lucerne; ‘*alaft khushk*’”. In Persia, however, “green lucerne” is called ‘*alaft*’ and “hay” *yūnjé*. W. I v a n o w (in personal conversation) was so kind as to attract my attention to the word *vāš* and *xušk-vāš* used in the colloquial of Qazvin for “hay”.—The word was unknown to me, but Steingass gives, s.v. واش, “Forage, food for cattle” (as usual, without any indications as to its origin).—

bīgāh, *bēgāh* (بیگاه) = P. وقت شام - شب in the evening, at eventide.—The same in Psht., v. Raverty, s.v. But, even in H. (cf. Platt's, s.v.), not to speak of P., بیگاه means “untimely; inopportunistly”.—

The word occurs in Muḥammad Amin's text. T. 363 ll. 5, 18; 370 l. 14; 374 l. 14.—

bīkār nabūdan (بیکار نبودن) = P. کار داشتن to be busy: *ma bīkār nāstum* = P. من کار دارم “I am busy”.—In P. بیکار means “out of job, unemployed; idle”.—

bīnī (بینی) obs. = P. دماغ nose.—cf. LorPhon. p. 200 b.; Morg Front. 241b. *bīnī'xān* “nostril”.—cf. also Morg Texts 321 note.

bīxī (بیخی) = P. قطعاً fundamentally; wholly; totally; absolutely: *bīxī na-mānda* “nothing absolutely remains”.—

b'rāmadan (بر آمدن) = P. بیرون آمدن - بیرون رفتن to go out; to come out; to happen: *b'rāmada* “he is gone out; he is not at home”;—

AA. نبرامده (*nabrāmada*) = P. اتفاق نیافتاده “it did not happen”;—

mībrāyad "it happens"; "he will go out"; "he will go up". 'Abdul-Karīm has got several instances of آمدن بر used in that sense: p. 16 l. 6 آمد بر "he came out from the citadel"; p. 37 l. 21 آمد بر "he left Bukhara"; p. 42 l. 23 ارادۀ بر آمدن داشتند "they wanted to leave"; p. 102 l. 2 آمد بر پول نقدش "it amounted to one million money in cash"; p. 102 l. 3 آمد بر ... بقزل جر "he went out to Qiziljar"; p. 109 l. 10 آمد بر آهسته "he went out quietly".—

Teufel has got: آمدیم بر p. 375 l. 10; p. 373 ll. 9, 10; آمدند بر p. 300 l. 1, and میبراید p. 339 l. 33; he has, however, also instances of the correct use of the verb (probably under the influence of literary Persian to which Muḥammad Amīn seems to have been more open than 'Abdul-Karīm), for instance: p. 376, ll. 4-5 بالی

—از خاک ریز بدیوار قلعه آمدند بر 5-6—نفاره خانه آمدند

buhayra (بحیره) = P. دریا - خلیج - sea; gulf: AA. بالتیک بحیره "the Baltic Gulf".—In P. بحیره "a small sea; a lake".—

bulūkmīšr (بلوک مشر) = P. نائب Lieutenant: *bulūkmīšr-i duyyum* (بلوک مشر دوم) = P. Second Lieutenant. From T. *būlūk* "platoon" and P sht. مشر *mašar* "elder".

burs (برس) = P. بورش (*būriš*) brush.—Strangely enough the K. word seems to be borrowed from F. "brosse", whereas the P. term reminds us of the E. "brush". One would rather expect it to be the other way about.

burūt (بروت) H. = P. سیل whiskers, moustache. cf. Steingass, s.v.; Lor Phon. 185a; 201a; Morg Front. 242b; 389b.; Morg Sh. 49. In P sht., however, بریت *bret* (Raverty).—

butal (بطل) E. = P. بطری (*butrī*) bottle.—

buzurg (بزرگ) = P. اولیا - ولی a saint.—cf. *kalān*. In P. بزرگ means only "great; big; large".—

būdāna (بودنه) = P. بلدرچین T. a quail.—

būdā (بودا) H. = P. پیر مرد old man.—Also P sht. بودا *būdda*. Obviously H. *buddhā* "old, aged; old man".

būdubāš (بود و باش) H. = P. توقف - اقامت staying; stay.—cf also *bandubāst*: most of these compounds, of which H. is so fond, have entirely disappeared in P. (or, maybe, never existed at all).

būra (بوره) H. = P. شکر sugar.—Obviously the H. بورا *būrā* “powder; sawdust, filings; coarse sugar; white sugar” (Platts).—cf., however, Steingass, s.v., who gives, besides the ordinary meanings of the P. word بوره, also the meaning “lump(?) sugar”.—

būrī (بوري) H. = P. گوني bag.—

būt (بوت) E. = P. (1) اروسى boots; (2) پتین F. shoes, and (3) چاکمه knee-boots.—

Č

čaka (چكه) = P. پنیر cheese.—cf. Psh t. چكه “coagulated milk, curd” (Raverly). Probably connected with the verb چکیدن “to drop, distil; trickle, ooze”.—

čaland (چلند) = P. (1) رواج currency; current; (2) پول خرد small change.—Probably a corruption of the H. چلان “challan”.—

čam (چم) = P. چمن grass; turf, lawn.—

čambēlī (چمبیلی) H. = P. یاسمن jessamine.—

čamčā (چمچه) H.—T. = P. قاشق T. spoon. LorPhon. 179b gives it as “čimčā” and 194b. as “čamčā”. cf. also MorgFront. 246a. The word is used in K. along with its P. equivalent, which even seems to be more widely current.—

čangak (چنگک) = P. قلاب hook: *čangak-i mākī* (sic ماعی) = P. قلاب ماهیگیری “fishing-hook”.—

čapa (چپه) = P. وارونه - سرنگون upside down:

čapa kardān = P. بر گرداندن to turn over; to turn upside down”;

čapa šudan = P. سرنگون افتادن “to fall upside down; to get overturned”.—Obviously from P. چپ “left”, in the meaning of “the wrong, the reverse side”.—

čapan (چپن) T. = P. no equivalent. A coarse mantle made of thick cloth (almost like felt) peculiar to Afghanistan. Bianchi gives چپان “vieux (sic) vêtement”, which is obviously our word.—

čaparkat (چپرکت) H. = P. تخت خواب bedstead.—The word is obviously an adaptation of the H. چپرکته *čhapparkhat* “tester-bedstead”. The K. word is, however, applied to the roughest kind of trestle-bedsteads made of inter-

woven ropes on a coarse wooden frame (as also used in India). The second link of the compound is interesting in so far, as it seems to enter also in the composition of the current P. word نیمکت "sofa".—

čapli (چپلی) H. = P. چارق sandals, slippers.—From the H. čampal, čappal.—

čapras (چپراس) H. = P. قرن قفلی - پاشنه در hinges.—It is certainly a somewhat corrupted Persian (though non-extant in P.) compound چپ [و] راست "left [and] right" (like the above-discussed *bandubast*, *būdubāš*, probably coined by the Indian Moghuls), and I think that Platts is wrong when trying to derive the A.-I. "chaprassi" from some Skrt. root.—

čarpū (چربی) = P. چربی fat; fatness.—cf. MorgFront. p. 246b.

časpīdan (چسپیدن) = P. گرفتن to take (speaking of fire). cf. supra *band šudan*.—

čāšim (چشم) = P. چشم (čāšm) eye.—Note the intercalation of an unnecessary vowel even in an Iranian word; in A. words ending in two consonants such an unwarranted intercalation of a vowel is almost as current in K. as in India: *wāqit* (inst. of وَقْت); *šāmā* (inst. of شَمْع); *qātal* (inst. of قَتْل); *sābir* (inst. of صَبْر), etc. Before an *izāfa*, however, that superfluous vowel disappears, v. Introduction, chapter on Pronunciation, p. 13-14.

čatal (چتل) H. = P. کثیف dirty.—Probably H. چتلا "spotted, speckled".—

čatrī (چتری) H. = P. چتر umbrella, sun-shade.—

čawkāt (چوکات) H. = P. قاب frame. Obviously the H. چوکبث "frame of a door", etc. (Platts).

čawki (چوکی) H. = P. مندلی chair. cf. MorgFront. 245b.—

čaukīdan, jawkīdan (چوکیدن - جوکیدن) = P. کوبیدن to pound.—

Is not found in dictionaries. As a conjecture, one may take it to be a secondary formation from the *جوکوب* (lit. "pounded to the size of barley-grains") given by Steingass, s.v., as "bruised, coarsely ground", and by Raverty, s.v., as "half-pounded, coarsely ground", i.e. *چوکیدن* > *جوکیدن* > *بجو کوبیدن* (or *جوکیدن*).—Lor Phon. gives it p. 179b as *čukīd-*, *čikīd-*: *čuk-*, *čik-* "to hammer, pound, hammer in". Whether in any way

connected with چکش "hammer": I find in Morg Front. 391b the latter word with the spelling ču'kūš?

čawri (چوری) H. = P. مڪس پړان "a chowry", cf. Hobson-Jobson s.v.

čārmayz (چار مغز) = P. گردو walnut.—Nay, even: čūb-i čārmayz "walnut-tree". cf. also LorPhon. 179a, 194b (given in the latter case as "čārmās"); Morg Front. 392a, given as "čār māys"). The compound چار مغز "the four marrows", is used in P. to indicate a trayful of four kinds of nuts, i.e., walnuts (گردو), hazel-nuts (جوز), pistachios (پسته), and almonds (بادام), which in Persia are often served at receptions on various occasions and eaten together with dry raisins.—

čār-rā'i (چار راهی) = P. چهار راه; a cross-road; a crossing.—With a yā-yi nisbat.—

čāwni (چاونی) H. = P. سرباز خانه barracks, cantonment. Obviously the H. چهاونی.—

čāwuk (چابک) obs. = P. زود quick: čāwuk biyā "come quick!" LorPhon 179a, 194b. In 'Abdul-Karīm's text the word occurs only once p. 104 l. 3: هرگاه کسی اندک چابک: "if anybody does not move quick enough.....".

čāyjūš (چای جوش) = P. قوری - teapot. And also:

čāynak (چاینک) R. = P. " " "

čipil (چغل) = P. غریل - a sieve.—cf. also MorgFront. 391b.

čihāp (چهاپ) H. = P. چاپ (čāp) printed; printing; print.—

čiklīt (چکلیت) E. = P. شکولاته (šukulād) F.-R. chocolate.—

čilim (چلم) H. = P. قلیان water-pipe, hookah.—

činār (چنار) = P. تمبری poplar (Populus alba). In P. the word چنار is used for a "plane-tree" (Platanus orientalis).

činčirān (چنچردین ؟) E. = P. تئیر دیود F. tincture of iodine.—

či-wāqit (چه وقت) = P. کی when.—The P. word is very seldom used in K. and even not understood at all by the lower classes of the Afghan population, who invariably mistake it for که "who".—

čičak (چیچک) T. = P. آبله small-pox: čičak zadan (چیچک زدن) = P. آبله کوبیدن "to vaccinate".—

čir kardan (چیر کردن) H. = P. پاره کردن to tear up.—Obviously fr. the H. چیرنا “to rend, tear”, etc.

čuf v. *čup*.

čukčuka (چک چک) = P. ? rumours.—Steingass has got چکچک *čukčuk* “anything whispered about” and چکچک *čukčuk* “news spreading on every side”.—I have not met with the word in P.

čumluk (چمלק) T. ? = P. مُچاله - فشرده - چین خورده crumpled, creased.—

čup v. *čup*.

čugur (چغر) = P. (1) عمق - گودی - بلندی depth; (2) عمیق - گود - بلند - گود - عمیق deep.—Bianchi gives in vol. I, Appendices p. 777a: *tchaghoul*, s.p. “Fosse, trou en terre”, which seems to be the same word. Morg Front. 245b has, however, got: *čuku'ri* “a well”. Turk. *čukur* “deep, a hole”, etc. W. Ivanow was so kind as to inform me (by letter) that the word is used in the gipsy-jargon of Khorasan in the meaning of “a depression in the ground, a valley between hills”, etc.—

čurut (چرت) A.-I. = P. سیگار cigarette. syn. *sigrit* q.v. From A.-I. “cheroot”.—

čux (چخ ؟) = P. زنگ clever. Lor Phon. 179b has got: *čuk* “straight, upright (?)” which seems to be the same word. *čūbwālā* (چوب والا) = P. هیزم فروش wood-seller.—For the suffix v. Introduction, p. 17.

čūča (چوچه) = P. جوجه (*jūja*) chick, chicken; also “the little ones” of any animal: *čūča-i pišak* (چوچه پیشک) = P. بچه گربه “kitten”;

čūča-i sag (چوچه سگ) = P. بچه سگ “whelp”; nay, even:

čūča-i gāw (چوچه گاو) = P. گوساله “calf”.—

Lor Phon. 148 gives *čūčik* “the young of animal, of bird”. This seems to be an older form of the same word and probably ought to be read with the suff. -ak, not -ik, [cf. however, the South-Russian (prob. T.) “*tsutsyq*” “a whelp; a small dog”, where the vowel in the termination is -y- (-i-), not -a-].—

čūna (چونه) H. = P. آهک زنده - آهک تفته quick lime.—Obviously H. چونا “lime, slaked lime” (Platts).—

čūnki (چونکه) = P. چون - برای اینکه - as; because.
Probably under T. influence.

čūp, *čup*, *čuf* (چف - چپ - چوپ) H. = P. خاموش silence;
silent.—From H. چپ *čup* “silence, quiet, stillness”, etc.

čūr kardan (چور کردن) H. = P. چاپو کردن T. to rob; to loot.—

čūtī (چوتی) H. = P. پتین shoes.—From H. چوتی

čūtī (چوتی) H. = P. تعطیل holiday; vacations. From H. چھوت
“severance, separation; liberation, release”.—

čūra (چوخه) T. = P. no equivalent. A coarse mantle (cf.
čapan). From T. چوخا - چوخه - چوqe “drap et étoffe en
général, et particulièrement sorte de vêtement de moine”
(Bianchi).—cf. I v Rust. 256 “*chugha*, a warm cotton
cloak, worn by men”.—

D

da (—[د]) = P. در (*dar*) in.—cf. also I v Birj. No. 12 l. 4;
No. 13 ll. 2, 6, 7; No. 15 ll. 3, 4, 5, etc.

dabal (دبل) E. = P. دولائی double: *nān-i dabal* “white
bread (European)”.—From the H.-E. دَبل *dabal* (used in
India with reference to coins).—

dabalkōt (دبل کوت) E. = P. پالتو F. overcoat.—Syn. *bālāpūš*,
q.v.—

dafādār (دفعه دار) H. = P. وکیل باشی - sergent; non-com-
missioned officer.—

dalla (دلّ) = P. دلّال go-between; procuress.—Abbrev. of the
P. word. Occurs also occasionally in popular literature,
as a feminine name: دلّ و مختار (name of a book, v.
H. E th é. Neupersische Litteratur (Grdr. d. Iran. Phil. II
p. 323); also (دلّ محالّه), as name of a woman in different
popular tales.—The abbr. seems to be also current in A.:
cf. for instance, *Burton*, *Nights*, II, 329, and elsewhere.

dar bayn-i (در بین) = P. درمیان - میان in, inside: *dar bayn-i*
bāy “in the garden”. In P. در بین is applied rather to
time than to place: در بین راه “during the journey”,
“when passing”. v. supra *bayn*.

dar dādan (در دادن) = P. روشن کردن to light (the fire).—

darwāza (دروازه) = P. در - دریچه door (of a room, of a house);
door (of a carriage, of a stove, of a cupboard, etc.) In P.
دروازه means only “the gates (of a city)”.—

daryā (دریا) = P. رود - رودخانه river :

daryā-i Kābul "the Kābul-river".—‘Abdul-Karīm has got: p. 14 l. 16 دریای حیرمند—p. 46 l. 8 (sic) دریای عمویه p. 65 l. 15 دریای آمویه etc. Also T. 272 l. 16 دریای کانر نهان etc. In P. دریا means only "sea", and its diminutive دریاچه means "lake".—

dastār (دستار) = P. منديل turban.—

dastī (دستی) = P. الآن directly, immediately.—

In P. دستی is an adjective and means only "cash-money; advanced-money; hand-money".—

dastūr (دستور) = P. اماله enema, clyster; clyster-pipe.—

dašnām (دشنام) = P. فحش abuse, invective.—

The word is obs. in P., but anyhow spelt with a *ḡamm* in its initial syllable: *dušnām*.

dawrāwar (دوروار) = P. دورور all around.—It is difficult to decide, whether we have here in the *-ā-* a part of a suffix *-āwar* (like, for instance, in *janāwar*, q.v.) or a connecting vowel merely, like in P. *barābar*.

dawūs (؟ . . .) = P. دیوث a pimp; a voluntary cuckold (term of abuse).—

dā (ده) = P. ده (*dah*) ten.—

dādagī (داده گی) = P. صادره - صادر despatched; outgoing: OL. "a telegram sent by the Ministry of Commerce".—cf. also *firistādagī*.

dād u girift (داد و گرفت) = P. داد و ستد commerce; commercial transaction.—The standard expression, however, is also used in K.

dāyma (داغمه) = P. داغ blemish; spot, stain (when speaking of carpets, clothes, etc.): *ī qālīn dāyma dāra* "this carpet has got stains".—

dā'ira (دائرة) = P. اداره department; direction :

AA. دائرة پست و تلگراف = P. اداره پست و تلگراف "Post and Telegraph Department".—

dāk (داك) H. = P. پست mail, post: *dāk-xāna* = P. پستخانه "Post-Office". cf. also Hobson-Jobson under "dawk".—

dāl (دال) H. = P. نخود peas.—

dān (دهن) = P. دهان (*dahan*)—دهان (*dahān*) mouth.—

dānānīdan (دانانیدن) = P. معلوم نمودن to make known :

AA. باید بدکتر مذکور بدانانیم “we must make it known to the said doctor....” cf. also Introduction p. 31-32.

dānistān دانستن = P. (1) دانستن to know; (2) ملتفت شدن to understand: *dānistum sāb* “I understand, Sir”. Syn. *fāmīdan* q.v. cf. also *dānista šudan*, Introduction, p. 28.

dāra (دارة) = P. راهزنی robbery.—From Psht. *dārr* “a company, a band, a gang of thieves” (Raverty): NN. دزدی و دارة و تاراج “theft, robbery and looting”.—

dāru-l-hukūma (دار الحکومه) = P. پایتخت capital.—

dāsūmī (ده صومی) = P. ده منائی ten roubles (Russian gold coin). Probably for ده سومی “a tenner”.—

dāš (داش) = P. فر stove (for cooking).—The word, though less often, is also used in P.

dāw (داو) = P. فحش abuse, invective. Syn. *dašnām*.

dāw zadan = P. فحش دادن to abuse.—cf. also Steingass s.v.—

dēg (دیگ) = P. دیگ (*dig*) pot, kettle.—

dēwāt, dīwāt (دیوات) = P. دوات, (*davāt*) inkstand.—

dilkušā (دلکشا) = P. دلگشا (*dilgušā*) “expander of hearts”: *kot-i dilkušā* pr. n. of a palace in Kabul.

In P. the verb گشودن is always pronounced with a voiced initial guttural.—

diqq, daqq (دق) = P. قهر vexation, anger: *ma az tu diqq šudum* = P. من از تو قهرم or تو قهر کردم “I am angry with you”.

The word is extremely current in K. and, though certainly never used colloquially in P., can, however, be traced in literary Persian: In the *Mathnawī* (Bombay ed. 1318) we have got p. 116 l. 27:

جز مگر آن صوفی کز نور حق
سیر خورد او فارغ است از ننگ و دق

And not only in older literature, nor confined to Eastern Persia, but also in such a comparatively modern poet of Shiraz, as Qa'ānī in his *Parīshān* (Browne, Lit. Hst. IV, 327):

تا ز حسودان نرسد دق مرا
سخره باطل نشود حق مرا

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Probably often also elsewhere.—In these two examples it rhymes with *haqq*, which means that it was pronounced in Persia with a *fatḥ*. Yet, in K. the pronunciation *diqq* is by far more current than *daqq*, though, generally speaking, the vowel in it is somewhat veiled.—

dirīšī (دریشی) = P. رخت clothes.—Probably E. “dress”, through H.-P sht. cf. MorgFront. 251a.—

disambar (دسمبر) E. = P. دسامبر (*disāambar*) F. December.

dīgam (popular) = P. دیگر other; again.—

dīn[a]rūz (دینروز) = P. دیروز yesterday. cf. L or Phon. 182a, 197b (in the latter place merely *dīna*); also Horn (Grdr. d. iran. Phil. I), pp. 27, 164 (*dīna*).—

dīrīn (دیرین) = P. دیرینه ancient.

diwāl (دیوار - دیوار) = P. دیوار (*dīvār*) wall.—In P. vulgarly, however, also *dīfāl*.—

dōbī (دهویی) H. = P. رختشور washerman.—

dukṣanrī (دکشنری) E. = P. کتاب لغات or لغات dictionary.—

dumal (دمل) = P. دنبال (*dumbal*) imposthume, abscess.—Stein-gass, s.v. thinks it obviously to be an arabicized form of the P. word.

du-mīla (دو میله) = P. دولوله two-barrelled: دو میله “a two-barrelled gun”.—

dusad (دو صد) = P. دویست two hundred.—Often in the *Shāh-nāma*, also in the *Mathnawī*, for instance, p. 117 l. 13 (B: bay ed. 1318): که دو صد لعنت بر این تقلید باد v. Introduction, under Numerals.—

dūkān (AA. دوکان) = P. دکان (*dukkān*) shop.—

dūlča (دولچه) = P. (1) مطل bucket.—A corruption, in diminutive form, of A. *dalv* > *davl* > *dūl*. Horn (Grdr. d. iran. Phil. I) p. 6, 56 seems to accept this form (*dōl* in his transcription) as normal and thinks it to be an Aramaic loan-word (on p. 6) and a Syriac loan-word (on p. 56).—

(2) شاددان chamber-pot.—

E

ēn-a (این است) = P. whether این است or the old اینک “Here!”; “here you are!”

F

faṭālīn (فلالین) = P. فنانل (*fanālin*) flannel.—

faṭīta (فلیته) = P. قیطان ribbon.—The word seems to be a transposition of the A. فتیله (*fatīla*) “twisted (rope); a wick”. Yet, cf. Horn, p. 6, who gives “*palīta* ‘Docht’” as an Aramaic loan-word in Persian.—cf. also Lor Phon. 142 p. 20. Ravery s.v. gives only the meanings “a match, torch, wick, fusee”, and for دار فلیته “a matchlock, being fired with a match”.—The H. فیهه “ribbon; tape” seems not to be connected with our word, being, as correctly pointed out by Platt, s.v., a Portuguese loan-word.—cf. also Hout Sch., 56, who gives *pilī'teh* as Mukri and Khurasānī Kurdish, etc.

farnīčār (OL. فرنچر) E. = P. اثاث البيت - اسباب خانه furniture.—

farvarī (فروری) E. = P. فوریه F. (*farvriya*) February.—

faṭqan (فوقاً) = P. در فوق above.—

faṭl (فیل) E.-H. = P. نا کام failing; failed (at examinations).

faṭr (فیر) E.-H. = P. شلیک fire-shot, round: AA. گلوه فیر
“fifteen rounds”.—

faysala (فیصله) = P. تتمه completion, settlement (of an affair).—

faṭšan (فیشن) E. = P. تزیینات decorating, adorning, garnish-
ing.—From E. “fashion”.—

fābrīk (فابریک) = P. کار خانه works; mill. From German.

fābrīkagārī, *fābrīqagārī* (AA. فابریکه گری — MA. فابریقه گری) = P.
صنعت fabrication, production, construction.—

fāltū (فالتو) H. = P. یدکی spare-parts.—

fāmāndan (فهماندن) = P. حالیه کردن to explain; to make under-
stood, to make understand: *fāmānda turwānistum*? “do you
understand?” (lit. “was I able to make [it] under-
stood?”).—

fāmādan (فهمیدن) = P. ملتفت شدن to understand. cf. *dānistān*.

In current speech *fāmādan* is rather used in a question,—
dānistān in the reply to the same:

Q. *fāmādi*? “did you understand?”

R. *dānistum* “I understand”.—

fāsila (فاصله) = P. لوبیا phazel, bean.—

fīristādagī (فرستاده گی) = P. فرستاده sent, dispatched: OL.

داشت فرستاده گئی خود "the note sent by yourselves". v.

Introduction, p. 17 cf. *dādagī*.—

firistāndan (فرستادن) = P. فرستادن to send, to dispatch, to forward.—v. Introduction, p. 31.

firistādan (فرستیدن) = P. فرستادن to send. cf. *uftādan*, *aftādan*.—

firqamišr (فرقه مشر) = P. میر پنچ Lieut.-General.—For the second link of the compound v. supra *bulūkmīšr*.—

filmury (فیل مرغ) H. = P. بوقلمون a turkey.—

fī-māh (فی ماه or فیماہ) = P. [در] ماهی per mensem.—For other such hybrid combinations cf. *fī-sad*, *lā-čār*, etc.

fī-sad (فی صد) = P. در صد or صدی per cent: AA. کمیشن (فی صد) "4 % commission".—

fīz (فیز) E. = P. شهریه fees (at a school).—

fōtō (فونو) E. = P. عکس photograph.—

furūš (AA. فرش فروش pl. of فرش) = P. فرشها carpets.—

G

galūn (گلون) = P. گلو throat. v. Introduction p. 11. cf. Morg Front. 395a.

galūš (گلوش) E. = P. گالیس goloshes.—

gap (گپ) = P. حرف word.—

In P. گپ means "idle talk", "gibble-gabble", etc., and is used in that sense in the Caspian Provinces of Persia (more especially in Mazandaran). *Gap zadan* "to talk".—Yet, cf. Horn, p. 76 § 34, 3.—Lor Phon. has not got the word recorded, but I find it in Morg Texts p. 311, also in LSI. 529. cf. Psht. *gapah*. The word must be very old and seems to be directly connected with the verb گفتن also Morg Front. 254a. cf. also E. slang "gab", "guff".—

garrāčī (گراچی) = P. wheel-barrow. May be in some way connected with the Psht. *gar*, explained by Raverty as "the sound produced by the wheels of a cart or carriage, rattle or clatter of wheels", unless it be a corruption (by transposition) of *gār[r]ēča* (گاریچه) "a small cart", which seems to be not quite devoid of probability.—

garyāl (گریال) H. = P. (1) ساعت clock; (2) ننگ bell, gong.—

gatt (گت) H.-P sht = P. مخلوط - قاطع mixed.—Obviously from H. گتهه “coupled; joined, united” (Fallon); “entered into agreement or compact” etc. (Platts) cf. also P sht. *gadḡ* “mixed, mingled”, etc. (Raverty) cf. also Morg-
Front. 254b.—

gays (MA. گیس) E. = P. گاز F. gas, gases —

gādi (گادی) H. = P. کالسکه - درشکه R. carriage.—From H. گاډي
In P. the word گاري or غاري means “a waggon, a cart, a chariot”, never “a carriage”.—

gādiwān (گادیوان) = P. کالسکه چي - درشکه چي a coachman.—

gāgār (گایر) = P. چپوش vicious, restive (of a horse).—Probably from گاه “time” and گرفتن (in the neuter sense) “to catch, to stick”: گاه گیر “one who comes to a stop from time to time” —

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gālīs v. *gālīs*.

gālīs, gālīs (گالیس - گالس) E. = P. بند شالوار braces.
—From the obs. E. “gallowses”, whether directly or through the medium of H. (I was unable to find such a word either in Platts or Fallon). cf. Iv Rust. 257 “*kāliskū*, the band, by which the *chârqaṭ* is fixed on the head”.—

gāmiskot (گامسکت) } = P. ؟ cretonne.—

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gišnīč (گشنیچ) P. = شویب fennel: *gišnīč-i rūmī* = P. جعفری
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داشت فرستاده گی خود "the note sent by yourselves". v.

Introduction, p. 17 cf. *dādagi*.—

firistāndan (فرستادن) = P. فرستادن to send, to dispatch, to forward.—v. Introduction, p. 31.

firistādan (فرستیدن) = P. فرستادن to send. cf. *uftīdan*, *aftīdan*.—

firgamišr (فرقه مشر) = P. میر پلچ Lieut.-General.—For the second link of the compound v. supra *bulūkmišr*.—

filmury (فیل مرغ) H. = P. بوقلمون a turkey.—

fī-māh (فی ماه or فیما) = P. [در] ماهی per mensem.—For other such hybrid combinations cf. *fī-sad*, *lā-čār*, etc.

fī-sad (فی صد) = P. در صد or صدی per cent: AA. کمیشن (۴) فی صد "4 % commission".—

fīz (فیز) E. = P. شهریه fees (at a school).—

fōlō (فونو) E. = P. عکس photograph.—

furūš (AA. فروش pl. of فرش) = P. فرشها carpets.—

G

galūn (گلون) = P. گلو throat. v. Introduction p. 11. cf. Morg Front. 395a.

galūš (گلوش) E. = P. گالیس goloshes.—

gap (گپ) = P. حرف word.—

In P. گپ means "idle talk", "gibble-gabble", etc., and is used in that sense in the Caspian Provinces of Persia (more especially in Mazandaran). *Gap zadan* "to talk".—Yet, cf. Horn, p. 76 § 34, 3.—Lor Phon. has not got the word recorded, but I find it in Morg Texts p. 311, also in LSI. 529. cf. Psht. *gapah*. The word must be very old and seems to be directly connected with the verb گفتن also Morg Front. 254a. cf. also E. slang "gab", "guff".—

garrāčī (گراچی) = P. wheel-barrow. May be in some way connected with the Psht. گار *gar*, explained by Ravery as "the sound produced by the wheels of a cart or carriage, rattle or clatter of wheels", unless it be a corruption (by transposition) of *gār[r]ičā* (گاریچه) "a small cart", which seems to be not quite devoid of probability.—

garyāl (گریال) H. = P. (1) ساعت clock; (2) زنگ bell, gong.—

gatt (گت) H.-P sht = P. مخلوط - قاطع mixed.—Obviously from H. متتهه “coupled; joined, united” (Fallon); “entered into agreement or compact” etc. (Platts) cf. also P sht. مد *gadd* “mixed, mingled”, etc. (Raverty) cf. also Morg-
Front. 254b.—

gays (MA. گیس) E. = P. گاز F. gas, gases —

gādī (گادی) H. = P. کالسکه - درشکه R. carriage.—From H. گادی
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gul šudan (گل شدن) = P. خاموش شدن to go out (fire): *ātaš gul šuda* "the fire is gone out".—

gul kardan (گل کردن) = P. کشتن - خاموش کردن to blow out, to extinguish.—Steingass, s.v., gives the following secondary meanings for the P. گل *gul*: "embers; a red colour; snuff of a lamp or a candle; . . . balls of charcoal used for burning the tobacco in a hookah; the caput mortuum of tobacco left on the tile of a hookah after smoking". For *gul šudan* he gives, however, the meaning "to become manifest; to arrive at the summit of greatness". The last two of the above enumerated secondary meanings for *gul* given by Steingass point to their H. origin, as the water-pipe (قلیان) is never called "hookah" in P., nor are any "balls of charcoal" ever used in Persia for the water-pipe. On the other hand, the above meanings for *gul* are also recorded by Platts, who gives besides: "*gul karnā* to extinguish (a candle or a lamp)"; and "*gul honā* to be extinguished; to go out (a lamp or a candle)".—That makes me think that there is a close connection between the H. and the K. expressions. Furthermore, proof positive for the existence of the word *gul* in the meaning of "embers" (may be originally *gul-i ātaš* "the flowers of the fire", i.e., "the hot coals") would seem to be offered by the word گلخن *gulxan* "fire-place in a bath; oven; furnace", where the second link of the compound might be a lightened form of *xāna* "house" cf. also Morg Front. 253b, 394b.

gurda (گرده) H. = P. کلیه - کلیه kidney.

The word is of Persian origin, but not used in Persia, where its A. equivalent slightly modified (کَلْبَه > کَلْبَه > کَلْبَه) is current. I am not prepared to say, whether the A. word itself is not an early borrowing of Iranian origin.—

gusil kardan (غسل کردن) = P. فرستادن - روانه کردن to send; to put on the way.—

The expression is obsolete, but occurs in literature, cf. for example, the *Siyāsat-Nāma* (ed. by Ch. Schefer, Paris, 1891) p. 73.—Syn. *rāi kardan* q.v.

guzaštāndan (MA. گذشتاندن) = P. عبور دادن to make pass.—

gūgird (گوگرد) = P. کبریت (vulg. *kīrbīt* and even *čīrbīt*) matches.—Syn. *māčīs* q.v.—In P. گوگرد means only "sulphur".—

gūla (گوله) = P. گلوله bullet.—

gūr kardan (گور کردن) = P. فرو کردن to let down; to let in, to drive in :

AA. ملخ دم خود را در ریگ گور کرده تخم می اندازد "the locust thrusts its tail into the sand and lays eggs".—

Γ

yarīb (غریب) H. = P. فقیر poor, indigent.—In P. غریب means only "stranger" and (sometimes also) "strange".—

yawr kardan (غور کردن) = P. ملاحظه کردن - دقت کردن to consider; to discuss; to think over.—The A. word غور means originally "to descend; to enter deep", and, though very current in H., is not used in P.—

ṡayr-i hāzīr (غیر حاضر) = P. غائب absent (from school, etc.)

yazata (MA. غرتۀ) R. = P. روز نامه newspaper.—

yāz (غاز) R. = P. گاز gas: MA. غاز زهردار "poisonous gases". cf. *gays*.

yundimīšr (غند مشر) P s h t. = P. سرتیپ دویم Brigade-General.—

The first link of the compound is probably P s h t. *yundi* "alike, similar, resembling" (Raverty, Morg Voc. s.v.). For the second link v. under *bulūkmīšr*. The whole would consequently mean literally something like "vice-chief".—

yūsīl-xāna (غسلخانه) H. = P. حمام bathroom.—

yūčī (غوجی) = P. پرستوگ a swallow. Morg Front. 395 b. gives 'yūčī. (with both short vowels) "a kind of bird".

yūrī (غوری) H. = P. قاب - دوری a dish.—In P. غوری means "a teapot". H. dictionaries (Fallon, Platts) give the word as P. with the meanings of "dish", "plate".—Syn. *kištī*, q.v.

H

harb-i umūmī (حرب عمومی) T. ? = P. جنگ بین المللی The Great War.

hālī (حالی)
(vulg. *ālē*)— } = P. حالا - فوراً - الآن now; directly.—

I find the word in that meaning in the *Siyasat-Nāma* (Schefer, text) p. 72.—

I

idṣāl (ادخال) = P. دخول - داخل شدن entering; entrance: OL.
تکت اجازهٔ ادخال "entrance-ticket".—

The A. word (IV form) implies the idea of an active meaning "to make enter" and could not be used in P. in the neuter sense.—

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احتفالي ميگيرند "they make a gathering", "they assemble in a gathering".—

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It seems with regard to these two words that they were originally integrally borrowed from E. That is to say *jarman* (German) and *jarmanī* (Germany) were at the outset mere transliterations of the respective E. adjective and noun. Very soon, however, the misleading termination-ī must have been confused with a Persian adjectival suffix (*yā-yi nisbat*) and the meanings of the two words began to alternate, so that at the present time both of these words are used in both senses.—

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jarmanī (جرمنی) E. = P. (1) المان F. Germany; (2) المانی F. German.—

It seems with regard to these two words that they were originally integrally borrowed from E. That is to say *jarman* (German) and *jarmanī* (Germany) were at the outset mere transliterations of the respective E. adjective and noun. Very soon, however, the misleading termination-ī must have been confused with a Persian adjectival suffix (*yā-yi nisbat*) and the meanings of the two words began to alternate, so that at the present time both of these words are used in both senses.—

jarnayl (جرنیل) E. = P. جنرال (*janrāl*) F. General.—

jarra (جره) = P. پیاده on foot; walking: *ma jarra āmadum*

“I came on foot”.—Seems to be connected with the A. جر
“to drag, to draw, to pull”.

jastī (جستی) R. = P. برنج latten brass.—Seemingly from the
R. *žest* “tin”.—

jālī (جالی) = P. شلنوک rice in husk.—Probably Indian.—

jālī (جعلي) = P. قلب false; bad (coin).—

jānīšīn (جانشین) = P. مستأجر tenant.—In P. جانشین means a
“locum tenens”, “a successor”.—

jāyādād (جایداد) H. = P. تیول assignment of land; landed pro-
perty.—Also used in P s h t., v. R a v e r t y, s.v.

jēl v. *jīhil*.

jīhil, *jēl* (جهل) = P. جهل (*jahl*) stupidity, ignorance: *ilm-u-jīhil*
“learning and ignorance” (the Amīr in his speech at the
inauguration of the memorial of the victory over the
Mangals). More commonly *jēl*, cf. MorgTexts p. 324
and note 2 on the same page: also MorgVoc. s.v. *jēl*
“ignorant”.

jīm (جیم) H. = P. جین (*jīn*) E. twill; twilled cotton; drill
(white or drab-coloured)—From the E. “jean” (i.e.,
“Genoese cloth”).—

jūdāgāna (جداگانہ) obs. = P. علیحدہ separate; separately.—

jurāla (جغاله) T. = P. شن gravel.—I find in Bianchi the
T. چاقل - چاغل “petit caillou”, which seems to be another
form of the same word.

juwārī (جواری) H. = P. ذرت Indian corn, maize.—cf. Morg
Front. 263a.—

jūar (جوهر) = P. جوهر (*jawhar*) essence.—

jūlā[y] (جولا [ی]) = P. عنكبوت a spider.—From P. جولا “a
weaver”. Also P s h t. cf. also MorgFront. 397b.

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Phrases, p. 44. In P. جور means only “equal, alike; assort-
ed”, also (as noun) “kind, sort”.—From H. جورژ *jōr*.—

jūra (جوره) = P. جفت pair; replica.—

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jūta (جوته) H.-Psht=P. بدل imitation, substitute.—From H. either directly or through Psht. جوته *jutta'h* (1) “refuse, leavings”, etc. (2) “base, false, as coin or gems” etc. (Raverty). In K., however, it is only an antonym of *sučča*, q.v.

jūti (جوتي) H. =P. کفش slippers (of Indian make).—

K

kačālū (کچالو) H. =P. سیب زمینی potato.—In H. the word seems to have meant originally the esculent root of the plant *Arum colocasia* (“sweet potato”, F. “la patate” or “la patate”) and been only later transferred on the ordinary potato.

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kalt (کلت) H. =P. نشان badge, order; decoration: ساز. “maker of decorations” (on a sign-board in Kabul). From H. کلت *kalit* “machine-made; fabricated; contrived; beautiful”.—

kamānak (کمانگ) P.....plinth.

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kamīsyūn, *kamīsūn* (AA. کمیسون - کمیسون) =P. حق الزحمت commission; per cent. From German.—

kamīšan (AA. کمیشن) E. =P. حق العمل commission (as above)

kančīnī (کنچینی) H. =P. رقاص dancer; musician.—I find in ‘Abdul-Karīm p. 106 l. 7 کنچینی ها یعنی رقاصان from which one can conclude that the word was known, but not currently used, since it needed an explanation.—

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“I came on foot”.—Seems to be connected with the A. جر
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K

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karam (کرم) = P. کلم cabbage, cf. supra *gul-i karam*.

karā, *karāh* (کراه) = P. کرایه hire.—

karāhī (کراہی) = P. کرایہ for hire.—

karākaś (کراکش) = P. چاروا دار muleteer. cf. MorgTexts, 326.

The word occurs with the same spelling (کراکش) in 'Abdul-Karīm's text p. 88 l. 23; p. 103 ll. 12, 14, 15.—

karāyī (کرائی) = P. تابه - تابه frying-pan.—Probably from Psht. کړېدل *karredal* "to be parched, grilled, scorched, baked", etc. (Raverty). Unless fr. the P. کره, "butter"?

karrat (کرت) = P. مرتبه - دفعه time: *yak karrat* "once", "some time".

kaś kardan (کش کردن) = P. کشیدن to pull, to drag.—

kaśīdan (کشیدن) = P. معزول کردن - بیرون کردن (1) to discharge (from office); to dismiss: *ūrā az xidmat mīkaśum* "I shall discharge him from office";

(2) to drive away: AA. ... از خاک مقدس خود "you have driven away the enemy from your sacred [mother-] country".—

kat-i (کت) = P. با with. Syn. *hamrā[h]*. LorPhon. 169 gives and translates this word as "along with", but with a certain hesitation. MorgTexts has it pp. 312, 313 and elsewhere, and translates it accordingly. LSI. X, 529 has got the word in the form *gat-e*. There is no doubt as regards its meaning (the word is extremely current), but its origin is as dark to me, as it seemed to be to Lorimer, l.c. Could there be any connection with the Psht. *kat* "heap, pile" (Raverty, s.v.), also given Morg-Voc. 35 as "of unknown etymology"?—

katlāk (AA. کتلاک) E. = P. کتالوگ (*katālūg*) F. price-list catalogue.—

katta (کتّه) H. = P. کلفت thick, coarse.—Psht. غتّه - غتّه

(*yat—yatta*) and کتّه (*kaṭṭa*) Raverty, from H. کتا *kaṭṭā* "well-knit, able-bodied, stout, strong, sturdy", etc. (Platts).—cf. IvBirj. 340 "*kat, katta* large, big"; also Morg Shugh. 58 and MorgFront, 268 b. *kaṭṭa-bāw* "grandfather".—

kawk (کبک) = P. کبک (*kabk*) partridge. cf. LorPhon. *kauk*, 'chikor', "red-legged hill-partridge".—

karvškān (کفش کن) = P. دالان anteroom.—

kāk (?.....) E. = P. چوب پنبه cork.—

kālkā (کاکا) H. = P. (عمو) paternal uncle.—In P. کاکا means “brother” and is used in application to slaves or servants born in the house (خانه زاد): کاکائی سیاه or (more currently, dropping the *iḏāfa*) کاکا سیاه “a black brother (i.e. slave)”. For the terminology of other degrees of relationship in K.v. MorgTexts 309 note 2.—

kālā (کالا) H. = P. رخت clothes.—Platts gives کاله - کالا *kāla* “silk-cloth; cloth” etc. as Persian; cf. also IvTab. 372.—also MorgFront. 265 b., 398 b (in the latter case recorded as *kālī*).

kāpī (کاپی) E. = P. کپیہ (*kupiya*) F. copying-pencil.—

kārāt (کارات) = P. کارها affairs, works: AA. ملخ بکارات زراعت “the locusts cause [many] kinds of damage to agricultural works”.—For the A. plural-termination with a Persian word v. Introduction, p. 15-16.

kārd (کارد) E. = P. کارت (*kārt*) F. card.—

kārīz (کاریز) = P. قنات aqueduct.—A most concise description of a *kārīz* can be found in IvBirj. 240 note 1; also BrYear, p. 116, note.—

kārtūs (کارتوس - کارطوس) F. = P. فشنگ cartridge.—Obviously the F. “cartouche”, also in Psht. and H., but through what channel?

kārxāna (کارخانه) = P. مطبخ - آشپزخانه kitchen.—In P. کارخانه means only “mill, factory, workshop”.—

kāški (AA. کاشکه) = P. کاشکی (*kāškī*) Oh if! Oh would that happen!—The word کاش in the same meaning is also used in P., but as an exclamation or interjection, that is without the relative particle که.—

kāwal, *kābal* (کابل - کاول) = P. feather-grass (*Agrostis linearis*). Probably fr. Psht. کابل *kabl*. cf. also R. *kowyl*¹ (probably imported by the Tartars).—

kāz (کاغذ) = P. کاغذ (*kāyaz*) paper:

kāz-i xuški (کاغذ خشکی) = P. کاغذ خشک کن “blotting paper”;

kāz-i rādār (کاغذ راهدار) = P. کاغذ خط دار “lined paper”;

kāz-i dāki (کاغذ داکی) = P. کاغذ پست “letter-paper”.—

kēlā (کیلا) H. = P. موز plantain, banana; fruit of the *Plantago sativa*.—

kēš (کیش) = P. پتو a rug, a blanket.—The origin of the word is doubtful. MorgFront. 399 b. gives the meaning

"shirt" and marks it down as Persian. Steingass gives inter alia "muslin, fine cotton cloth";.... "a fur coat"; a kind of linen garment", and spells the word *kaish*.

I am inclined to think with R a v e r t y (s.v.) the word to be a Psht. corruption of the H. کبیس *khes* (or *khīs*) "a kind of figured cloth; diaper, damask;— a sheet or wrapper of such cloth" (Platts), which probably was the result of a confusion with the Persian کشیدن or Psht. کښل *k'shal* "to pull, to draw".—

kilk (کلک) = P. انگشت finger.—In Persian کلک (obs.) means "a reed, a reed-pen". Steingass, s.v. gives, however, as Persian, *kilik* "squint-eyed, the little finger". cf. MorgFront. 265 b. "‘*kilk* *yušt* little finger Afgh. Prs. *kilk* (little) finger".—

kilkīn (کلکین) H. ? = P. پنجره - دريچه window. Syn. *urūsī* q.v.

I do not find the word (which is, however, very current, being the only current word for "window" in K.) anywhere and can only think of it as a possible corruption of the Psht. کرکی *karr-ka'ī*.... "a window, a sally-port, a casement, a wicket, a loop-hole" (R a v e r t y), which is, in its turn a loan-word from H. کھڑکی *khīṛkī* "a private or back-door; poster-gate; wicket, sally-port; a window, casement; a shutter", etc. (Platts).—

kištī (کشتی) H. = P. قاب - دوری dish.—In P. کشتی means only "a boat", whereas in K. an "oval dish" bears that name, probably owing to its shape. cf. the E. "vessel".—

kitlī (کٹلی) E. = P. دیگ kettle.—

kikā v. *tikā*.

kīmiyāwī (کیمیائی) = P. کیمیائی (*kīmīyāyī*) chemical. cf. *itālāwī*, *tāīfawī*, etc.

kōlar (کولر) E. = P. فرقہ - یخہ collar.—

kōt (کوت) E. = P. سرداری coat.—

kōtband (کوت بند) E. - P. = P. لباس جای coat-hanger.—

kōṭ (کوٹی) H. = P. خانہ house.—Fr. H. کوٹھی *koṭhī* "a masonry house", etc.

kudām (کدام) = P. یک (or *yā-yī vahdat*) some. v. Introduction, p. 24. In P. کدام is always interrogative and means "which ?".—

kuland (كلند) = P. كلنگ (*kulang*) mattock, pick-axe.—cf.

Morg Front. 266a who gives it as *ka'land*.

kulča, kulīča (کلیچه - کلهچه) H. = P. a cake, a biscuit.

From H. کلیچه *kulīča*, which seems to have originally had the meaning of "an orb, a disc", and to have received only later that of a "round cake". cf. BrDial. 822 "کلیچه" "bread mixed with oil and sugar, and made into the form of discs"; cf. R. *kulič* (prob. through the Tartars).

kulfi (کلفی) H. ? = P. sauce-boat, sauce-bowl.

kunayn (کنین) E. = P. گنگنه (*gingina*) F. quinine.—

kundukmišr (کندک مشر) = P. سرهنگ colonel.—I am at a loss with regard to the meaning of the first link of the compound, unless it is a synonym of غند (*v. yundimišr*) and is merely a diminutive of the P s h t. گند *gund* "equal, even, level, on a par with, on a level with, co-equal" (Raverty). For the second link of the compound *v. bulūkmišr*.—

kunjāra, kunjāla (کنجاره - کنجاله) ? = P. تُنْجَارَة - تُعَالَة dregs; remains of anything squeezed; oil-cake.—Whether from H. کنجال *kunjāl* "green scum formed on stagnant water" (Platts)?

kurti (کرتی) = P. a tunic; a short coat; a jacket.—W. Ivanow was so kind as to inform me (by letter) that the word is quite current in Khorasan and seems to be a corruption of کردی "Kurdish".—

kušūdan (کشودن) = P. باز کردن to open: AA. مكتب حقوق "a school of diplomatic (i.e. international) law has [been] opened at the high (i.e., honoured) Ministry" (i.e. the Afghan Foreign Office).—In P. the obs. verb گشودن is always pronounced with a voiced initial consonant. Its P. equivalent in the above quoted phrase would probably have been تأسیس شدن "to be founded".—

kūči (کوجی) = P. کوچری T. nomad.—

kūka (کوک) H. = P. مینخ کوچک tin-tack: *kūka-i sīmī* = P. مینخ کوچک مفتولی "wire-tack". cf. H. کوک *kokā* "a small thorn, a prickle; a small nail, a tack" (Platts); cf. also MorgFront. 265a *kūk* "nail", etc. There seems to

be some connection between this word and the P. کوک
"winding up; stitching, basting", etc.—

kūta (کوتۀ) H. = P. (1) خانه house; (2) اتاق room: OL. عمارت
"the upper storey of the Ministry of Interior, which contains numerous
rooms". H. کوتۀی - کوتۀا etc.

kūta'ī kardan (کوتاہی کردن) = P. کوتاہ کردن to bargain; to agree
about the price of something.—The expression seems to
be merely a corruption of its P. equivalent: in
P. کوتاہی کردن means "to fail, to omit doing something;
to withhold something".—

kūya (کویہ) H. = P. بیت moth, moth-worm.—Prob. from H.
کویا *koyā* "cocoon (of the silkworm)".—

L

lambar v. *nambar*.

lambīdan (لنبیدن) = P. افتادن to fall.—Probably connected
with (if not directly derived from) Psht. لمبیدل - لنبیدل
lambedal "to wash, to bathe, to dip, to soak"
(Raverty). cf. however H. *lamb dālānā* "to drop (or
let fall) a perpendicular (on)" (Platts).—

laṅgūta (لنگوتہ) H. = P. عمامہ turban.—Fr. H. لنگوت
laṅgot "waist cloth; loin-cloth".—

lapp (لپ) Psht.-H. = P. no equivalent. A double
handful.—The word seems to be Indian and to have
crept into K. through the channel of Psht.—Steingass
s. 7. gives it as Persian (at least he does not mark it other-
wise) and explains it as "a large mouthful".—cf. also my
"Afghan Weights and Measures" JASB, vol.
XXIV, 1928, No. 4, p. 422.—

laškar (لشکر) obs. = P. قشون army.—Occurs, of course, in
classical literature, colloquially, in P. however, only in
titles (*laqab*) of [military] officers, like امیرلشکر or names
of function like لشکر نویس "army comptroller", and such-
like formations.—Occurs severally in Muḥammad
Amīn's text: T. 294 ll. 3, 22; 306 l. 36; 362 ll. 2, 4, 16;
363 l. 18; 365 ll. 12, 16.

lat kardan (لت کردن) H. = P. کونگ زدن to beat, to thrash
(somebody).—Fr. H. لت or لات "a kick" (Platts).—

layk, *lāk* (لیک) obs. = P. لیکن - لاکن but.—

laymbū (ليمبو) = P. ليمو (*limū*) lemon,—seems to be merely a corruption of its P. equivalent.

laymp (ليمپ) E. = P. لامپا *lāmpā* R. lamp.

layr (ليز) E. = P. ترن *train*.—A corruption of the E. “rail” with the usual transposition of the two liquidæ; also *rayl*, q.v.; also *qatār-i āhīn* q.v.

lāčār (AA. لاچار) = P. ناچار forcibly.—Such hybrid compounds with an A. particle, as the first, and P. noun, as the second link of the combination, are utterly inadmissible in P.—

lēāz v. *lihāz*.

lihāz, *lēāz* (لحاظ) H. = P. واسطه - جهت cause, reason: AA. “because of that; for that reason”. A quite current word in K. speech, which, however, (although a not uncommon A. word in the meaning of “close observation”) is never used in P., at least in the meaning attributed to it in K. and H.

liwāmīšr (لوامشر) = P. سرټيپ اول Major-General.—The first link of the compound seems to be the A. لواء “banner”. For the second link v. supra *bulūkmīšr*.

libarāl (ليبرال) E. = P. آزادي خواه liberal: AA. حزب ليبرال “the Liberals”, “the liberal party.”—

līlām, ليلام } H. = P. خراج auction-sale.—Seems to have been
yīlām ييلام } borrowed directly from Port. *leilão* into K. where the corruption has not touched the initial consonant, as against H. نيلام *nīlām*.

līsak (ليسك) = P. پوست برة نودلی صاف skin of an unborn lamb without curls. cf. *tigir*. Whether in any way connected with لیسیدن “to lick”, or contamination of لیز “sleek, smooth” with that verb?

luč, *lūč* (لوچ - لچ) H. = P. برهنه - لخت naked, bare: *pā-i luč* = P. پا برهنه “barefooted”.—The word seems to be borrowed fr. H. (maybe through P s h t. where it takes, however, the form لُخ *luts*), but it certainly is not P., and could hardly also occur in literary Persian. Morg Front. gives it, however, p. 269a and 399b as Prs. (in the latter case in the form *lūč*).—

luyāt (لغت) obs. = P. زبان language: also in plur. *luyāt* (لغات).

“languages”. In P. the A. لغت means “a word”, and its plur. لغات means “a dictionary”.—

luk (لک) = P. کلفت thick.—

lukī (لکی) = P. کلفتی thickness.—

lund (لند) H. = P. جاکش a sodomite-pander.—Probably from H. لونڈا.—

lurrī (لری) E. = P. کامیون F. motor-lorry.

lūč v. *luč*.

lūčak (لوچک) = P. لوطی vagabond, hooligan.—Probably a diminutive of the preceding.—

M

ma, man (من) = P. من (*man*) I.—

Both forms of the personal pronoun of the 1st person (v. Introduction, p. 21) are currently heard, with that distinction that the illiterate part of the population always drops the final *-n*, whereas the educated classes, although trying to use the “literary” form, drop the *-n* occasionally.

madad (مدد) obs. = P. کمک help.—

makāra (مکارة) R. = P. بازار عام a yearly fair: AA. مکاره بین المللی “the international yearly fair at Tashkent”.—

makfi (مکفی) = P. کفایت sufficiency; adequate supply:

NN. بقدر مکفی = P. بقدر کفایت “in sufficient quantities”.—

In the K. expression, مکفی is an adjective determining the word قدر, which is taken here in its original value of an ordinary noun, whereas in P. the expression بقدر plays the rôle of a preposition and governs the genit. case.—

maktab (مکتب) = P. مدرسه school.—In K. the word مدرسه is only applied to Muhammadan theological schools, which results in such misnomers as: مکتب زراعت “the [writing-] school of agriculture”; مکتب حقوق “the [writing-]school of law”, etc.

malāmat (ملامت) = P. مسئول responsible; open to blame: *agar na....ma malamat* “if not....I shall take the consequences” (a very current expression, never heard in Persia). But cf. Schefer, Siasset-Namèh, text, p. 48 l. 9: اگر پدید نیاید مرا ملامت کن: “if it does not show itself,—[then you will have the right to] blame me”.—

mānā (منع) = P. منع (*man'*) prohibition, restriction.—

mangas (?.....) = P. مگس fly.—

mansabdār (منصبدار) H. = P. صاحب منصب military officer.

Probably under the influence of H. (or vice-versâ). cf. also *afsar*.—

manzūr kardan (منظور کردن) = P. قبول کردن or قبول داشتن to accept. Lit. "to take into consideration".—I find one instance of this expression in 'Abdul-Karīm's text p. 71 l. 22: "و منظور نکرد" and he did not accept".—In the case, however, where Md. A min uses the word (T. 325 l. 37): "منظور نظر خاقان کردانید" it is used in the original meaning of the A. passive participle "seen": "he caused it to be seen by the eye of the Khāqān", i.e. "he showed it to the Kh.".—

marātāba, *marātība* [?] (مراتبه) = P. مرتبه (*martaba*) obs. or دفعه time: OL. یک مراتبه باین اداره بیایند "will you come, when convenient, to this Office".—The form does not seem to exist at all in A., even were it to be read *murātāba* (maṣdar of the III form). It may be added here in parenthesis that in P. the expression یکمرتبه does not mean, as in K., "once", but means "all at once; suddenly". In all probability, the word ought to be read *marātība* (although it is pronounced in current speech "marātāba" and would be then the broken A. plural from مراتبه used in the meaning of a singular (v. Introduction, p.

16) with an A. indefinite article (ک —) tacked on to it. I am strengthened in that belief by the numerous instances of the form مراتب occurring in 'Abdul-Karīm's text in the meaning of Sing., viz: p. 43 l. 5: هر هفته یکمرتبه; p. 47 l. 20: هر دو سال یکمرتبه; p. 47 l. 21: چند مراتب; هر مرتبه; p. 72 l. 2: چند مراتب; p. 79 l. 10: هر روز یکمرتبه; p. 96 ll. 11-12: چند مراتب; p. 108 l. 19: این مراتب فتح از ماست.

marīna (مرینه) = P.....? merino.—

markab (مرکب) = P. دولاغ donkey.—The word occurs in literature in the general meaning of "a mount". cf., however, the story of the "Selling of the Ass" in the *Mathnavi* (B: bay ed. 1318, p. 116 l. 17): "مرکب خود برد و در آخر کشید" where, it would seem, the word is used rather in the sense of "donkey" than "mount".—

masāla (مصالح) = P. اسباب - سامان materials (for building purposes, etc.)—Should the word be used in P. (which I have never heard), it would naturally be pronounced correctly “*maṣālah*”—

maska (مسكه) H. = P. كره butter.—cf. also I v T a b . p. 11 note.

maškūr (مشکود) = P. مشکور grateful:

maškūr-am “I thank you”.—In P. مشکور, if ever used, could only mean “rewarded; compensated, indemnified”, never “grateful”.—

mawāziāt (OL. مواضع) = P. مواضع places. cf. for such double-plural formations *arākīn*, etc., also Introduction p. 16.

mawrī (موری) = P. مروی and obs. مروزی “of Merv”.—cf. Aw. Mouru-.

mawsūl (موصول) = P. واصل arrived; reached; received: AA. موصول گردیده است “has been received”.—

mayda (میده) H. = P. ریز - خرد reduced to powder; fine pounded; fine-ground: *ārt-i mayda* (آرد میده) and *tar-mayda* (ترمیده)? probably a mere transposition of the preceding “flour; wheat flour; white flour”.—

maykrūskup (میکروسکوپ) E. = P. ذره بین microscope.—

maynūḥaykār (AA. مینوفیکچر) E. = P. منوفاکتور (*manūḥāktūr*) F.-R. manufacture.—

mazdūr (مزدور) obs. = P. عامل workman.—Properly *muzdūr*, i.e. مزد “remuneration” and suffix *-ūr* < *-var* < *āvar*, lit. “one [whose services are] remunerated” or “one who gets remuneration”; cf. Morg Front, 274 b., where it is given in both forms. I have, however, not heard the correct form with *-u-* in K.—

mā bayn (مابین) = P. درمیان - میان in, inside: *mā bayn -i bāy* = P. درمیان باغ “in the garden”. cf. also ‘Abdul-Karīm’s text, p. 38 l. 21: مابین بنگاله بخانه “he was imprisoned in a room inside of a bungalow” (Schefer, p. 80, translates: “était renfermé dans le château de Bengalah,” which does not render at all the Persian construction of the sentence, besides being altogether erroneous).—

In P. مابین means only “between” (for place) and “during” (for time). cf. supra *bayn*.—

māčīs (ماچس) E. = P. کبریت matches. Syn. *gūgird* q.v.

mādanī (معدنی) = P. فلزی in metal; made of metal.—In P. معدنی (*ma'danī*) means “relative to mines,—to mining”.—

mājūr (مأجور) = P. ممنون obliged: AA. این عطایای شان مأجور و “these gifts granted by her (the Queen) [were received] with gratitude and thankfulness”.—In P. مأجور could mean (like *maškūr* q.v.) only “recompensed, paid, remunerated”.—

māl (مال) = P. اسباب - سامان - جنس materials; goods.—In P. مال by itself means “a mule” (sometimes also “an ass” in the idiom of donkey-drivers), and has the meaning of “goods” only in compounds like مال التجارة.—

mālam (?....) = P. مرهم (*marham*) plaster.—i.e. *marham* > *malham* > *mahlam* > *mālam*, with the falling out of the -h- and the resulting compensatory lengthening (v. Introduction p. 7-9).—

mālaq (معلق) = P. معلق (*mu'allaq*) somersault.—Whether any connection with *malak* “movement”, etc. MorgFront. 272 a, q.v. ?

mālī (مالی) H. ? = P. حامل bearer, porter. Cf. MorgFront. 400 a.

mālta v. *mīta*.

māmā (ماما) H. = P. دائی maternal uncle.—cf. MorgFront. 400 b.; MorgTexts 310, who takes it to be Prs., but v. Platt's, s.v. In P. ماما means only “midwife”.—

māmūlī (معمولی) = P. مندرس - مستعمل old; worn out.—In P. معمولی (*ma'mūlī*) means “usual, customary”.—

mānda (مانده) = P. خسته tired. v. Introduction, p. 36.

māndan (ماندن) = P. گذاشتن to leave; to put, to place.—For details v. Introduction, p. 35-36.

mārafat-i (معرفت) H. = P. بتوسط or بذریعہ through the medium of; care of; by means of.—Also used with the preposition *ba-*. Probably borrowed from H. or *vice versa*.

mārc (مارچ) E. = P. مارس (*mārs*) F. March,

māsūl (محصول) = P. حق - مالیات tax; toll, duty: excise:—

māsūl-i gumruk = P. حق کمرکس “custom-duty”;

māsūl-i afyūn = P. تعدید تریاک “excise on opium”.—

māyān (مایان) = P. ما - ما we (for many persons). v. Introduction, p. 21-22.

māyyat-i (معیت) = P. در رکاب - در خدمت با . with ; together with :
AA. معیت ذات شامانه. "with His Majesty".—

māz-i barāy-i (معض برای) = P. معض (or) معض برای for :
AA. معض برای فیصله این مطلب "in order to settle this affair".—

mēin (مهین) obs. = P. نازک لطیف fine, subtle.—Superlative degree from مهتر - مهتر, nowadays obs. in Persia, but very current, though not in this sense in the older literary language: in the *Shāhnāma* very often کبین و مهین "the lowly and the great".—

mēla, *mīla* (میله) H. = P. بازار a fair.—cf. Morg Front. 271 b.—

mēmān (مهمان) = P. مهمان (*mihmān*) guest: *mēmāndar* (مهماندار) "host; an officer appointed to act as host to foreign representatives".—cf. Morg Front. 272a and 400b.

mēr (مهر) obs. = P. محبت - عشق love, fondness.—

mērbānī (مهربانی) obs. = P. مروت - اللغات kindness.—
v. Introduction, p. 44.

mētar (مهتر) H. = P. کُتاش - کُتاش night-workman ; scavenger ; sweeper.—The word *musālīk* is, however, also largely used, q.v.

mēwq (میوه) = P. میوه (*māvé*) fruit.—cf. Introduction, p. 5.

misl-i az (مثل از) P. = مثل like . . . : *misl-i azū* = P. مثل او "like him".—

mistrī (مستری) H. = P. استاد master.—A polite form of address, when speaking to artisans, cooks, etc. Borrowed from Port., *mestre* probably through the medium of H. Syn. *salīfa* q.v.

mīting (مینگ) E.-R. = P. مجلس - جماعت meeting.—

mīla v. *mēla*.

mīm (sic! ?) H. = P. خانم lady: *du mīm az sijārat-i Birtāniyā āmada* "two ladies from the British Legation have come". Corrupted abbr. of the Anglo-Indian "mem-sahib".—

mīla, *mālta* (میند - مالنه) H. = P. پرتوغال - پرتوغال orange.—

mīzān (میزان) = P. جمع total: OL. میزان *(mīzān-i kull)* = P.

کل "grand total".—In P. میزان means "[exact] measure".—

mudāxalat (مداخلت) = P. مداخله *(mudāxala)* concerning oneself with something; interfering; meddling.—

mudīr (مدیر) = P. رئیس director.—

The word مدیر, though understood in Persia, is never used in P. and seems to have been borrowed from Turkey where it is a current official term in that meaning.—

muhassil (محصل) = P. طلبه student.—Syn. *tālīb-i-ilm* q.v.

pl. *muhassilīn* (محصلین) = P. طلاب students.—

muharaba-i azīm (محاربة عظیم) = P. جنگ بین المللی the Great War.—Syn. *harb-i umūmī*, q.v. It is obvious that, contrary, to P., no definite expression to denote the "Great War" has been established in K. The expression given here seems to be borrowed from T.—

muīn (معین) = P. معاون assistant.—

mukarraran (AA. مکرراً) = P. مکرر repeatedly. cf. Introduction, p. 37-38.

mumkina (ممکنه) = P. امکان possibility: *ba-qadr-i mumkina* (بقدر ممکنه) = P. حتى الامکان "as far as possible".—The K. word is naturally an adjective, and the construction is lit. "to the degree possible". cf. supra *makfī*.

murč (مرچ) H. = P. نفل pepper.—

musālih (مصالح) = P. کُتاش - کُش or کود کش sweeper; scavenger; night-workman.—Syn. *mētār* q.v. The termination *-ih* is clearly pronounced, probably in order to avoid confusion with *masāla* (مصالح), v. supra.

mušār ilayhi mazkūr (مشار الیه مذکور) = P. (either) مشار الیه (or) مذکور the above-named:

OL. "so that the above-named, having acquainted himself with the plans, " etc.

Such and similar pleonastical expressions (cf. *amrāh-i bā*, *baray-i az*, *māz-i az*, etc.) are very current, and cannot always be attributed (as probably is the case here) to an incomplete understanding of the exact meaning of the A. expression used.—

mušunk (مشنک) ? = P. ماش green peas.—

mutarajim (sic!) = P. مترجم (*mutarjīm*) interpreter, translator.—

More often, however, *tarjumān*, q.v.

muwaqqat (موقت) = P. موقت temporary.—

muxtasaran (مختصاراً) = P. (either) مختصر (or) بطور اختصار (or more seldom) اختصاراً in brief; in short; by way of abbreviation.—

mūlli (مولی) H. = P. (1) ترب horse-radish; (2) تربچه radish.—
Same in P s h t.

mūnč (مونچ) H. = P.chopped rope (used for making a kind of cement for building purposes).—

mūr (مور) obs. = P. مورچه ant.—Although widely used in literature (cf. Sa'di موری ملخ etc.) the word is not used colloquially by Persians, and would not be even understood, if so used.

mūr (مهر) = P. مهر (*muhr*) seal.—

mūrkan (مهر کن) = P. حکاک engraver; dye-sinker.—

mūsīča (موسیقیچه) H. = P. فاخته قمری turtle-dove.—Syn.
pāyṭak q.v.

mūtār (موتور) { E. = P. اُتومبیل F. motor-car: موتورکار هذا
mūtarkār (موتورکار) } “this motor-car” (on a licence).—

mūtarrān (موتوران) {
mūtār wān (موتوران) } = P. اُتومبیلچی motor-driver.—

*The first of these two expressions is a literal translation of the E. term, its second link being the Imp. of the verb راندن “to drive”. There occurs, however, even the expression AA. موتور درایور *mūtār-dirāywar*, which is a mere transliteration of the two E. words.—

mūza (موزه) obs. = P. چاکمه T. riding-boots.—

mūzika (موزیکه) R. = P. موزیک F. music; orchestra, band.—

N

nabad (؟.....) = P. نمد felt.—I have never come across the word in writing.

nayz (نغز) = P. پاک لطیف - نظیف pure, fine, elegant: *yak nayz ādam būd* “he was a fine man”. Cf. I v Tab. p. 11;

I v Birj. 341. The word is not used in P., but can be traced in literature: محفلي نغز دیدم و روشن "I saw an assembly elegant and brilliant" (Hātif of Isfahan, Tarjī-band, 3rd band, 2nd verse).—

nal (نل) H. = P. لوله tube, pipe: *nal-i āw* "water-pipe" (for bringing water into houses).—From H.—Skr. *nala*, v. Platts s.v.

nambar, lambar (لمبر - نمبر) E. = P. نمرة (*numra*) F. number.

nawāsa (نواسه) = P. دخترزاده - پسرزاده (obs.) grandchild.—

'A b d u l - K a r ī m has got نواسه in his text (once), but I am unable to retrieve my reference to page and line without perusing once more the greater part of his book, so I am leaving it at that. cf. MorgTexts, 310 note; MorgFront. 277 b.; 403a; MorgShugh. 61, and, more especially, MorgVoc. 54.—

nādan (نهادن) obs. = P. گذاشتن to place, to put: *binē da sar-i mayz* "put [it] on the table". cf. also I v Birj. 265 l. 2 and note 1 on the same page.—Syn. *māndan* q.v.

nāib-sālār (نائب سالار) = P. امیر تومان General.—

nāibu-l-ukūma (نائب الحكومة) = P. فرمانفرما Governor-General.

In P. نائب الحكومة means "Vice-Governor".—

nājūr (ناجور) H. = P. ناخوش unwell.—cf. MorgFront. 276a; 402a; MorgShugh. 61.

nāk (ناک) = P. گلابی pear.—cf. MorgFront. 276a; MorgShugh. 61; Raverty, s.v.

nāl (نهال) = P. نهال (*nihāl*) young plant; sapling (not "tree" as LorPhon. 204b); cf. MorgFront. 275b.

nālat (؟.....) = P. لعنت (*la'nat*) curse.—cf. MorgFront. 402a. cf. *padarnālat* in the Introduction, p. 46 and s.v.

nām (نام) obs. = P. اسم name: *nām māndan* "to give a name; to name" v. Introduction, p. 35.

nām-nēk (نام نیک) = P. نامی famous; honourable.—

nāma-nigār (نامه نگار) = P. قایع نگار - خبر نگار correspondent (of a newspaper).—

nā-mardak (نامردک) = P. نامرد (lit. "unmanly") a contented cuckold; a pimp; a pander.—A term of gross abuse in both languages, which certainly does not mean merely

“Unmensch, Taugenichts”, as Salemann and Shukovski, *Persische Grammatik* p. 89 § 79. (*Porta Linguarum Orientalium*).

nān (نان) = P. غذا food.—Naturally also used to denote “bread”, as in P.

nār (نهر) = P. نهر (*nahr*)-جوى a stream; a rivulet.—

More often *nār-i āw* = P. جوى آب “a stream”.—

nā-rāz (ناراضى) = P. ناراضى (*nā-rāzī*) dissatisfied, displeased.—

nāryāl (ناریال) H. = P. نارگیل H. cocoanut.—Both forms are of course Indian.

nāšpātī (ناشیپاتی) H. = P. گلابی a pear; (metaphor. also) vulva.—cf. *Lor Phon.* 189a; *Morg Front.* 277b.

nēk, *nēkō* (نیکو - نیک) obs. = P. خوب good.—

niswār (نسوار) H. = P. انفیخ snuff.—The correct form is probably *nāswār* (from H. *nās* “snuff”), as given by Raverty, s.v., who also records the lightened form *naswār*. But, I have always heard *niswār* in Kabul.—

niswār-i bīnī (نسوار بینی) = P. same as the preceding.—

niswār-i dān (نسوار دهن) = P. no equivalent, snuff-tobacco mixed with lime for chewing (a habit very current among the lower classes in Afghanistan).—

niswār kardan metaphor. “to die”.—

nīlum (نیلم) H. = P. یاقوت کبود sapphire.—

nuqra-ābī (نقره آبی) = P. لاجورد - آبی blue.—

nut, (vulg.) *lut* (لط - نط) E. = P. اسکناس R. bank-note.—

nuwambar (نومبر) E. = P. نوامبر (*nuvāmbār*) F. November.—

nūṭā (AA. نوטה) ? = P. یادداشت note (diplomatic).—The word یادداشت is, however, also largely used in K.—

P

padar-kalān, *bāba-kalān* (بابا کلان - پدر کلان) = P. جد grandfather.—cf. *Morg Texts*, 310, note, who has, however, only *padarkalān*. Hout Sch. has got s.v. “*bāwā-kāl*, Grossvater”, as Amarlū and Zenganeh Kurdish.—

palān (پلان) F. = P نقشه plan; map.—

palās (پلاس) E. = P. گچ pincers; pliers.—Corr. of the E. “pliers”.—

palāstar-sīmant (پلاستر سیمنت) E. = P. سمند (*samand*) cement-plaster.—

palla-yi darwāza (پلّه دروازه) H. = P. در لای fold of a door;
leaf of a door.—From H. *pallā*.—

paltan (پلتن) E.-H. = P. باتالئون F. battalion.—Same also in
Psh t., cf. Raverty s.v. Probably a confusion of the
E. "platoon" and "battalion". Is supposed to be a
body of 1,000 men. cf. Morg Front. 279b.

pančar (پنچر) E. = P. پنچر (*punčur*) E. puncture (of a motor-
car tyre).—

panja (پنجه) = P. چنگال fork.—

panj-kayk (پنچ کیک) E. = P. pancake.—

panj-sad (پنچ صد) = P. پانصد five hundred.—

pansil (پنسل) E. = P. مداد pencil.—

paračča, *paračša*, *paračta* (پرخشه - پرخشه - پرخشه) = P. خاکه اړه
- تراشه sawdust; wood-shavings.—

parīpūm (پریپوم) E. = P. طابه - طابه - داغ کن frying
pan.—Also *pilīpūn*.

partāw (پرتاب ؟) = P. (Imp.) بگذار put down!—The word seems
to be anyhow an Imp. and to point to some lost verb
partāftan "to put (to turn ?) down".—

It is difficult to say, whether there is any real connection
between our word and the P. *part* [*šudan*] "to get dropped,
lost" (which Lor Phon 183a considers to be "dialectic")
unless the latter is a mere abbreviation of our word.
As has been said, I have always heard it used as an
Imperative: "throw [it] down!; let go!"

Its possible (if not merely outward) connection with the
P. *partāb* (پرتاب) "bow-shot; arrow; ray (of the sun)"
is also not clear.—cf. I v Birj. 342.—I v Rust. 257.—

parwā nīst (پروا نیست) = P. عیبی ندارد there is no harm; no
fear.—cf. Morg Front. 281a.—

pasān (پس آن - پسان) = P. بعد از آن after that.—

pasāpūrt (پساپورت) E. = P. تذکره passport.—But also پورط
(*pāspūrt*). Both forms occur in the headings of passports,
visas, etc.

pas-i (پس) = P. پی - عقب after :

pas-i ū raftum "I went to fetch him";

pas-i kār-i xud "[to attend] to one's (or his) own
business".—

patnūs (پطنوس) R. = P. سینی tray.—

pawdar (پودر) E. = P. باروت [gun-] powder.—

paxta (پخته) = P. پنبه cotton; cotton-wool.—

paydāwār (پیداوار) = P. مواد حاصلات produce:

AA. برای تعریف پیداوار افغانستان بسیار کمک میکند "it is of great help for [establishing] an estimate of the productivity of Afghanistan";

AA. مواد پیداوار افغانستان "the raw materials produced in Afghanistan".—

paymāyīš kardan (پیمایش کردن) = P. اندازه گرفتن to measure.—

payra (پهره) obs. = P. کشیک - قراول guard; watch; watchman.—cf. Morg Front. 280 b. Unknown in P.—

paysa (پیسہ) H. = P. پول (1) name of the smallest coin (1/60 of a Kabuli rupee); (2) money.—cf. my "Afghan Weights and Measures" JASB., Vol. XXIV, 1928 No. 4, p. 424; also Morg Front. 281 b.—

payzār (پیزار) = P. کفش slippers; footwear.—An abridgment of the obs. پای افزار lit. "tool for feet".—

payzāra (پیزاره) = P. cornice.—

pazirānidan (پذیرانیدن) = P. بقبول مجبور کردن to make accept; to force upon.—Syn. *qabūlānidan*, q.v.

pā-bar-jā (پا برجا) = P. معتبر respectable.—Lit. "having the foot on the place", i.e. "firmly established".—

pāyṭak (?.....) Psh t. = P. ناخنه (*fākhta*) turtle-dove —

pā-juwāl (پا جوال) = P. مرد آسیا the miller's fee (for grinding "corn).—

pāki (پاکی) H. = P. تیغ دلاکی or تیغ razor.—cf. Morg Front. 403 b.

pālak (پالک) H. = P. اسفناج spinach.—From H., v. Platts, s.v.

pāldan (پالیدن) = P. چیزی گشتن to search, to look for: *mēpālum* "I shall look (for it)". Does not exist in P. Morg Front 279 b. marks it down as Ind., but gives it with a short -a: "*pal-: pa'tū-* to walk about (*gaštan*)".—

pālisi (پالیزی) AA. E. = P. مسلک policy.—

pālū (پهلو) = P. پهلو (*pahlū*) side.—cf. "*pālune*" in Iv Birj. 283 No. 38, also *ibid.* 248, last paragraph. With regard to the incremental final -n cf. Introduction, pp. 10-12.

- pān* (پهن) = P. *pahn* (پهن) broad, wide cf. Horn, 34.—
- pāntar* (پهنتر) comp. degree of the preceding.—
- pāsur* (AA. پاسخ) obs. = P. جواب answer, reply.—
- pālūn* (پالتون) E. = P. شلوار - شلوار trousers.—cf. Morg Front. 405a.
- pāyaltaxt* (پایه تخت) = P. پایتخت (*pāyaltaxt*) capital: AA. پایه تخت در وین پایتخت "in Vienna, the capital of Austria".—
- pāyān* (پایان) = P. پائین *pāyān* below; down, downwards; lower.—Both forms occur indiscriminately in 'Abdul-Karīm's text: p. 52 l. 18: نظر بنیایان چاه میکرد—but on p. 73 l. 6: آب یکمنزل راه رفته بودند and again p. 105 l. 13: به پایینست.—I do not find *pāyān* in Md. Amin's text, where *pāyān* occurs twice: T. 270 l. 9 and 305 l. 33-34 (note).—In K., however, only *pāyān* is used, which, in its turn, is entirely unknown in P.—
- pāy-gurīzī* (AA. پای گریزی) = P. گریزیا (*guriz-pā*) fleeting, unstable.—
- pēš* (پیش) = P. پیش (*pēš*) before.—And yet *pēšin*, q.v.
- pēšāw kardan* (پیشاپ کردن) H. = P. ادرار کردن - بول کردن to pass urine.—
- pēšbandī* (پیش بندی) H. = P. جلوگیری prevention, foresight: AA. چه برای فیصله واقعات سابقه و چه برای پیش بندی وقوعات آینده "both in order to settle the previous happenings and to prevent the [occurrence of any] further incidents".—
- In P. پیش بندی could naturally be understood only as an adjective from بند *pēš* "apron".—
- pin* (پن) E. = P. سنجاق *pin*: C. پن نگینه دار هر قسم "any kind of pins with glass-heads".—
- pinjāh* (پنجاه) = P. پنجاه (*panjāh*) fifty.—
- pirān* v. *pīrān*.
- pišak* v. *pīšak*.
- pišk* (پشک) = P. قرعه lot (-drawing, in connection with military service).—The word پشک is used in P. in a similar meaning, but only by children in certain games requiring the drawing of lots.—cf. also Morg Front. 282a.—
- piyāla* (پیاله) obs. = P. فنجان tea-cup; coffee-cup.—In P. the obs. پیاله means "wine-cup", if anything.—
- pīrān*, *pirān* (پیراهن - پیرهن - پیراهن) = P. پیراهن (*pīrāhan*) shirt.—

pīśak, *piśak* (پیشک - بیشک) = P. گربه cat.—In P., when speaking to small children, the cat is sometimes referred to as *pīšī* (پیشی) or *pīšpīšī* (پیش پیشی), i.e. “Pussy”. One also calls a cat in P. by means of repeating the sound “*pīš-pīš*” = E. “puss-puss”.—

cf. I v Kurd. p. 231; “*pesing*”; I v Tab p. 11 note پیوشک; Geig. 356: Gil. *pīča-māde* “die weibl. Katze”; LorPsht. pp. 206, 267a and 354 a پیشو *pīshū*, whereas Raverty, s.v. and Vaughan s.v., have only *pishū*; LorPhon. 183 b. has got *pušūk*, and 199 a *pušuk*; MorgFront. 282 a has *pīśak*. The word seems thus to have, both in K. and Psht. (I omit here the variants of Kurd. forms of the word recorded by HoutSch. p. 56) forms, in which the quality and quantity of the vowel-sounds seems to be of an oscillating character.—

pīšīn (پیشین) = P. عصری in the afternoon. Also *namāz-i pīšīn* (or simply *pīšīn*) = P. نماز عصر “afternoon-prayer”.—But *pēš*, q.v.—

pōsta (پوسته) = P. پست (*pust*) Post: *idāra-i pōsta* (اداره پوسته) = P. پستخانه “Post-Office”.—Syn. vulg. *dāk*, q.v.—

puḡ kardan (پف کردن) = P. فوت کردن to blow, to blow out (a light).—

punduk (پندک) Psht. = P. غنچه flower-bud; (metaph.) pudendum of a young girl.—Prob. fr. Psht. *pandūk*.—

purōḡrām (پروگرام) E. = P. پروگرام (*purūgrām*) program.—Also an A. plural-form from the same: AA. پروگرامات *purō-ḡrāmāt* “programs, schemes, plans”.—

pura (erroneously also *pūra*) (پوره - پوره) = P. کاملاً completely, fully.—

purza (پرز) H. = P. پارچه - تکه piece; scrap; bit; chip.—

pušt (پشت) = P. عقب after: *puštaš mērūm* (پشتش میروم) “I am going to fetch him”.—Syn. *pas-i*. q.v.

put (پت - پط) = P. قایم hidden, concealed: *put kardan* “to hide to put by”.—From Psht. پت *put* “hid, hidden”.—

pužūhiš (پژوهش) obs. = P. رسیدگی - تحقیق examining, studying (a question).—

AA. پژوهش احوال ملت “an enquiry in the circumstances of the nation”.—

pūda (پوده) = P. پوسیده rotting, rotten. Both Steingass and Raverty give it as Persian, but I have not heard it

in P., and the word is certainly not a literary one.— cf. I v B i r j. 342 “*pidū* (= LP. *pusīda* ?) rotten”.—

pūndīdan (پونديدن) = P. باد کردن to swell.—Probably fr. P s h t.

pūndīdal (پونديدل) “to expand, to swell”.—

pūpak (پوپک) P s h t. = P. منگوله a tuft, a tassel.—Prob. fr.

P s h t. پوپکه *pūpaka’h* “a bump, a swelling, a protuberance”.—

pūšāk (پوشاک) = P. لباس clothes, clothing.—

pūlaynd (AA. پوليند) E. = P. لهستان Poland.—

pūra v. *pura*.

Q

qablībarīn (AA. قبلبرين) = P. من قبل از اين or قبل before ; before that.—

qabūlānīdān (قبولانيدن) = P. به قبول مجبور کردن to make accept.—
v. Introduction, p. 32. Syn. *pazārānīdan*, q.v.

qalamī (قلمی) = P. خطی manuscript: *kitāb-i qalamī* “manuscript”, as opposed to کتاب چاپی (*kitāb-i čihāpī*) “a printed book”.—

qanāwīz (قناوين) = P. a kind of silk cloth.—

qāraz (قرض) = P. قرض (*qarz*) loan, debt.—

qarīban (قریباً) = P. (either) تقریباً (or) قریب (the latter with an *iz āfa*) nearly ; almost ; approximately : AA. قریبا هشت “nearly 800 men”.—

qaryadār (قریه دار) = P. کدخدا “alderman”; chief of a village.—

qātal (قتل) = P. قتل (*qatl*) murder.—v. Introduction, p. 14.

qatār-i āhīn (قطار آهن - آهین) = P. تړن or راه آهن railway-train. lit. “iron-convoy”. Syn. *layr*, q.v.

qawltānīdan (قولانيدن) = P. قول دادن to promise :

AA. قولانیده نمیتوانستند “they were unable to promise”.

cf. also supra *qabūlānīdan*. v. Introduction, p. 32.

qayza (قیزه) = P. دهنة horse-bit ; bridle. cf. P s h t. قیزه “water-ing-bridle” (R a v e r t y, s.v.) (= P. دهنة آبخوری).

qātīn (قالین) = P. قالی carpet.—

qāq (قاق) = P. مسفت کرده - خشک کرده dried ; hardened, made stiff :

gūšt-i qāq = P. گوشت یخ شده “frozen meat” ;

nān-i qāq = P. نان خشک “dried bread” ; biscuit ;

pīrān-i qāq = P. پیراهن آهاری “boiled shirt”;

kōlar-i qāq = P. فوکل آهاری “a stiff (starched) collar”.—

cf. Br Dial. 822 “کاکي ‘bread’” (quoted from a poem by Abū-Ishāq) cf. Iv Birj. 342 “*qoq*, a sort of bread”; Lor Phon. 176b.; Morg Shugh. 57.—cf. also Horn, p. 6, *kāk* “eine Art Brot”.—I make bold to suggest that the word does not mean “bread”, but is an adjective meaning “[artificially] dried” (or “hardened”).—

qīmat (قیمت) = P. گران dear, expensive: *ī as qīmat as* (این اسپی) (قیمت است) “this horse costs much,—is expensive”.—One of the many instances of the so current in K. use of a noun in the meaning of an adjective.—

qulāč (قلاج) T. = P. بغل fathom. cf. my “Afghan Weights and Measures” p. 421.

qulba (قلبه) = P. گاو آهن a plough:

qulba kašīdan = P. شخم زدن “to plough, to till”.—

In P. *قلبه* means “a furrow [made by the plough]”, not the “plough”, in spite of Steingass, s.v. cf. also Lor Phon. 176b “*qalwā*, plough”, etc.—

qurūt (قروت) T. = P. کشک curds.—cf. Morg Front. 267a.

R

rajistarī (رجستري) E. = P. سفارشي registered (letter).—

rang (رنگ) = P. (1) مرکب ink; (2) واکس R. boot-polish (for the latter also *rang-i būt*).—

rang-i ābī (رنگ آبی) = P. water-colour (as opposed to “oil-paint”).—Does not mean “blue” (as in P.) for which v. *nugra-ābī*.—

ranjūr (رنجور) obs. = P. مریض sick; ill.—

rasīdāt (رسیدات) = P. رسید - رسیدات receipts: کتاب رسیدات تلگرافات “peon’s book of the Telegraph-Office”.

The P. word رسید itself in the above meaning might be, for all we know, a mere adaptation (or transliteration) of the E. “receipt”.—

rawanda (رونده) = P. عازم going; departing; directing oneself:—

OL. هوا باز رونده فرائسه (sic!) طلباء “airmen going to France for training”.—

rawāk (رواک) = P. کشو drawer (of a desk, of a chest of drawers).—

rayl (ریل) E. = P. ترن F. train: AA. ریل مخصوص "express-train".—A misapplication of the E. "rail"; also *layr*, q.v. Syn. *qatār-i āhīn* q.v.

rābar (رهبر) E. = P. رهبر R. -کش india-rubber.

rākūl (راکول) = P. a harrow.

rārāwī (راهروی) = P. راهرو (*rāhrāw*) passage, corridor.—cf. supra *pā-gurīzī*.

rāsipār (رهسپار) = P. روانه going; being sent.—

rāy kardan (راهی کردن) = P. فرستادن to send.—cf. Iv Birj. 255 note 2; Morg Front. 284a.—

rijmint (رجمنت) E. = P. فرج regiment.—

rikābī (رکابی) H. = P. نعلبکی saucer.—cf. Lor Phon. 204b. "rikābī, dish".—

riwāš (رواش) = P. ریواس rhubarb.—

rizā šudan (رضا شدن) = P. راضی شدن to agree, to accept.—cf. also *safā kardan*.—

rīspān (ریسپان؟) = P. ریسبان rope.—Used in current speech in preference to the P. form. I have not, however, seen it in writing. Occurs also in vulg. speech in P.

rīzīš (ریزش) = P. زکام cold in the head.—

rubāt (رباط) obs. = P. کاروانسرای caravansera.—

rujū ba (OL. رجوع به) = P. رجوع به with reference to..... cf. *rizā šudan*, *safā kardan*, *qīmat*, etc.

rux dādan (AA. رخ دادن) = P. روی دادن to appear; to arise; to occur, to happen.—The expression is used in K. along with the usual P. form.—I find one instance of it in 'A bd ul-Karīm's text, p. 85 l. 6: جنگ رخ داد.—

ruxsat, (vulg.) *rusxat* (رخست) = P. (1) مرخصی leave; (2) مرخص allowed to depart; (3) خاموش gone out (fire) [Syn. *gul*, q.v.]: *ātaš ruxsat šuda* "the fire is gone out";

ruxsat šudan = P. مرخصی گرفتن "to get leave";

mā ruxsat? = P. بنده را میخواست مرخص شوم or مرخص میفرمائید؟ "may I go?" "allow me to go".—

The word occurs in 'A bd ul-Karīm's text once, p. 17 l. 13, and twice in Md. Amīn: T. 345 l. 23 and 358 l. 21.—

In P. a compound verb with شدن demands, as the first link in the combination, an adjective or (and that mostly)

an A. passive participle. K., however, allows (or, should we say, encourages) the use of abstract nouns in such compound verbs.—cf. Morg Front. 285b.; also Morg Texts, 311, ll. 3, 6; 315 l. 3, etc.

ruksatī (رخسائی) = P. تعطیل holiday; vacations.—Syn. *čōtī*, q.v.

rūnumā šudan (رونما شدن) = P. روی دادن to take place; to originate: AA. مجادله در بین افغانستان و برطانیه “a conflict arose between Afghanistan and England”.—Syn. *ruks dādan*, q.v.

rūyādād (رویداد) = P. رویداد صورت proceedings: جرگه “proceedings of the Lūy-Jirga”.—

S

sabaq (سبق) H; T. = P. درس lesson.—The word, although good A. and occurring occasionally in Persian literature, is unknown in P., but is exclusively used for “lesson” both in Afghanistan, in India and in Turkey.—cf. also Morg Front. 286b.—

sabāh (صبح) = P. (1) فردا to-morrow; (2) صبح [in the] morning.

It is an abridgment of the A. على الصباح “on the morrow”. Under the influence of P. the word *fardā* has also (quite recently) made its appearance in K., but it is used in a most inappropriate way, mostly in the meaning of “this morning”, in sentences like “*fardā raftā anūz nayāmada*” “he went this morning (lit., to-morrow), (but) has not yet come back”.—

It occurs many times in ‘Abdul-Karīm’s text: p. 17 l. 2; p. 20 l. 18; p. 24 l. 15; p. 34 l. 16; p. 50 l. 12; p. 52 l. 4; p. 56 l. 11; p. 61 ll. 7, 12; p. 68 l. 18; p. 69 l. 6; p. 74 l. 16; p. 81 l. 8.—cf. Morg Front. 286a; 406a.—

sadā kardan (صدا کردن) = P. در رفتن to go off (of firearms).—

safar-xarj (OL. سفر خرج) = P. مخارج سفر travelling-expenses.—

safā kardan (صفا کردن) = P. پاک کردن to clean.—cf. also supra *rizā šudan*.—The use of صفا (i.e., صاف) in the meaning of “clean” might be due to the influence of H. In P. [صفا] means “clear” (of liquids), “transparent” (of glass, precious stones, etc.), even;—صاف کردن means in P. “to

clarify", never "to clean" (not even when speaking of window-panes and the like).—cf. MorgFront. 287a "sāf, clean, clear, in order".—

saḡīr muxtār (sic: AA. سفیر مختار) = P. وزیر مختار Minister Plenipotentiary.—

sakka (سکه) H. = P. تڼي blood-relation: [*birādar-i*] *sakka-i ma* "my own brother".—From H. *sagā* "own; full; whole-blood": *sagā-bhāi* "own brother" (Fallon, s.v.)

salāsūm (سلا سوم) T. ? = P. وشق lynx.—

samāruq (سماروق) = P. قارچ mushroom.—Dictionaries (Stein-gass, Platt's, Bianchi) give سماروغ as Persian, but I have never heard it in P.

sanādīq (مناديق) = P. صندوقها chests; boxes.—Very current in ordinary K. speech.—

sandalī (سندلي) = P. کرسی "a kursi" (a contrivance for keeping warm in winter common to Persia and Afghanistan, consisting of a chafing dish placed under a low square-shaped table covered with a huge square counterpane under which all the inmates of the house sit by daytime huddled up to their chins, and sleep by night with their feet converging towards the common centre of warmth—the chafing-dish).—cf. supra *čawki*.—

sangbāqa (سنگ باقه) = P. لاکپشت or (less common) پشت سنگ tortoise.—Lit. "stone-frog".—

santara (سنطره) H. = P. نارنگي tangerine.—

saptambar (سپتامبر) E. = P. سپتامبر (*saptāmbār*) F. September.—

sarak (سرک) H. = P. راه road, avenue: *sarak-i puxta* "a causeway".—

The word seems to be borrowed from H. سرک or سڑک "a continuous line of road, road, high-road, highway" (Platt's).—

Our word has probably no connection with the word سرک quoted I v Tab. 24 note 1, as used only in the expression "*sārāk kāshidān* in the sense of 'to spy, to watch stealthily' in Fars".—

sardāw (سرداب) = P. آب انبار underground reservoir for drinking-water.—

saryūč (OL. سرغوج) R. = P. لاک sealing-wax.—

sarkārī (سرکاری) H. = P. دولتي governmental, belonging to the government.—In M̄d. Amīn's text, as quoted by

Teufel, the word سرکار occurs twice: T. 296 l. 13
 “Fiscus (سرکار)” and 329 l. 5 “Domänenkammer” سرکار.—
 cf. also Morg Front. 288b.

sar-kātib (سرکاتب) = P. منشی باشی head-clerk; First
 Secretary (of a Legation).—The compound seems to be of
 recent origin and probably borrowed from T.—

sarmayzi (سر میزی) = P. رومیزی (rūmīzi) سفره table-cloth.—

sar-muallim (سر معلم) = P. رئیس مدرسه headmaster (of a
 school).—The word seems to be a translation fr. E. unless
 it is a formation on analogy with sar-kātib, q.v.

sar-tabīb (سر طبیب) = P. حکیم باشی [head-] doctor.—

sawdā (سودا) obs. = P. اجناس - جنس goods: sawdā kardan “to
 sell”.—

sawf-i nazī (C. صرف نخي) = P. نخ پشمی knitting wool.—

sawq numūdan (سوق نمودن) = P. روانه کردن to send.—

sarwa (سبزه) = P. سبزه (sebzé) lawn, field.—

sayl (سایل) = P. سیر sight; sight-seeing: سیر بیني
 (heading of a hand-bill) “program of the recreations” (in
 Paghman). A corruption of the A. سیر. In P. the word
 (though seldom used) would be understood as “taking a
 walk”.—

sābiq az-īn (AA. سابق از این) = P. سابقاً formerly; before
 now.—

sāč (ساج) = P. سار starling.—

sālān, sālān (سالان - سالن) E. = P. سالاد (salād) salad.—A corrup-
 tion of the E. word. Prob. through H.—

sān (سکن) = P. شلوار shirting.—

sāri (سحری) = P. سر آفتاب at dawn: ma sāri āmadum “I came
 at dawn”.—Lor Phon. 186a has got “sa^r, morning”;
 cf. also Morg Front. 288a; 407a.—

sāzanda (سازنده) obs. = P. ساز گر - تارزن musician.—

sigrīt (سیگرت) E. = P. سیگار cigarette.—Syn. čurut, q.v.

silāhandāz (سلاح انداز) = P. تیر انداز skirmisher.—cf. M d.
 Amīn: T. 312 l. 5: سلاح در بر گرفته and 338, last line (note)
 سلاح طلبید.—The word سلاح is no more used in P., where its
 plural-form اسلحه is, however, current.—

silāpar (سلیپر) H.-E. = P. کفش slippers: C. مردانه پای سلیپر کلان

"large size slippers for men".—Applied only to slippers of European make, as opposed to *būt*, *čaplī*, *jūti*, *mūza*, q.v.

sipāh (سپاه) obs. = P. سرباز soldier.—

In P. the obs. word سپاه could mean "army" (for which, however, nowadays only the T. word قشون is used in P.), but could not be used to denote individual soldiers. Md. Amin uses the word in both meanings: T. 298 l. 6; 321 l. 36; 329 l. 15; 334 l. 4; 360 ll. 5, 6, 14; 364 l. 13; 371 l. 5.—The word does not occur in 'Abdul-Karīm's text.—

sisad (سه صد) = P. سیصد (*sīsad*) three hundred.—

sīm (سیم) = P. مفتول wire.—The word سیم, although occurring in P. in certain combinations like سیم تلگراف "telegraph-wire" تلگراف بیسیم "wireless", is not applied to ordinary wire used as material, when the word مفتول is generally applied. The latter, however, seems to be altogether unknown in K.—cf. Morg Front. 287b.—

simgil (سیم گل) ? = P. clay-plaster.—

sīsī (سیسی) = P. تیهر a (kind of) partridge.—

sučča (سچچه) H.-P sht. = P. اصل real, original.—From H. through Psht. (or independently), where, according to Raverty, who gives the word as سچ *such* or سچچه *suchaeh*, it means "pure, undefiled, unpolluted, clean, unadulterated, without flaw". It is, however, used both in ordinary K. speech and in C. in the sense of "the real article", as opposed to *jūta* (جوته) "imitation".—

sufayd, *sufed* (سفید) = سفید (*safīd*) white.—

sukuštan v. *šukustan*

sulaymāniya (سلیمانیه) = P. هودهد hoopoo.—

surā'i (صراحی) obs. = P. کوزه - تنگ jug.—

surx (سرخ) = P. (1) قرمز red; (2) داغ hot: *āb-i surx* = P. آب داغ "hot water". In P. the word سرخ is used along with قرمز, with that subtle difference that the latter denotes an inherent or natural redness, whereas the former is used with reference to an accidental or artificial redness: مرکب قرمز "red ink", but صورتش سرخ شد "his face became red, he blushed"; سیب سرخ "a red apple". The word قرمز seems to be unknown in K.—

sutra v. *sūtra*

sūb (سوب) E. = P. سوف soup.—

sūčā (سوجا) Psht. = P. پاک - لطیف - نظیف clean; pure; fine.—
cf. Raverty, s.v.—

sūdaxur (سودخور) = P. ربا خور usurer.—

sūn (?....) = P. سو (*sū*) side.—cf. I v Birj. 280 No 30 l. 1
and note 1.—v. also Introduction, p. 11.

sūriya (سوریه) = P. شام Syria.—

sūtra, *sutra* (سوترا - سترة) H. = P. پاکیزه - پاک clean;
tidy; pure.—Fr. H. ستھرا *suth'rā* “neat; tidy; clean;
clear” (Fallon s.v.).—

Š

šabīna (شبینه) = P. شبانه nightly; at night.—

šaftālū (شفقالو) = P. هلو peach.—In P. the word means a kind
of apricot.—cf. MorgFront. 289 b; MorgShugh. 68.—

šāmā (شمع) = P. شمع (*šam'*) light; candle.—

šamāl (شمال) = P. باد wind.—In K. *šamāl* does not neces-
sarily mean “northern [wind]” (as it would in P., where
it could not be used without the word باد prefixed to it),
and is used with reference to “wind” or “strong wind”
in general, irrespective of its direction.—cf. also Md.
Amin: T. 365 l. 10; I v Birj. 286 No. 51; 287 No.
53, etc.

šanawāndan, *šnawāndan* شنواندن = P. منتشر ساختن - انتشار دادن
make heard; to spread abroad; to divulge; to announce,
to declare: AA. نشنیده و نشنوده ایم “we have neither
heard nor published (any such thing)”.—

šarmīdan (شرمیدن) = P. خجالت دادن to put to shame; to
make ashamed.—

šaršam (شروشم) = P....turnsole-seeds.—

šaš (شش) = P. شش (*šāš*) six.—

šawbāšī (شب باشی) = P. بسر بردن شب passing the night; stay-
ing for the night: OL. وزارت خارجیہ چه در صورت شب باشی
تھیئے یکجائی مناسب را بدارد الخ “for should they stay for
the night, the Foreign Office, etc.”.—

šax (شخ) = P. سخت - سفت hard, firm.—cf. Raverty, by
whom it is given as Persian on p. 646 b, but as Psht.

on p. 678 : “*shakh* or *khakh*, adj. stiff, hard, not easily bent”, etc. Steingass, s.v. gives “hard ground, especially on the summit or at the skirt of a mountain; anything hard; a mountain; the nose of a mountain; a promontory”, etc. LorPhon. 202a has got “*šax*, cliff, slab of rock (= *taxt-i sang*)”.—

šābās (شابس) H. = P. بارس الله - bravo! also *ay šābās* in the same meaning.—An Indian corruption of the Persian شاد باش, not used in P.—cf. MorgFront. 289 b.—

šādī (شادی) = P. میمون monkey.—Prob. fr. Psht. شادر (*šādū*).—

sāyāsī (sic: OL. شاعسی) = P. ایشیک آقاسی (*išik-āyāsī*) chief usher; master of ceremonies.—A mere corruption of its P. equivalent.—

šākāsa (شاه کاسه) = P. تشت - طشت large basin; wash-tub.—

šāndan (شانندن) = P. نشاندن to make sit; to put, to place; to plant : AA. قطعه زمینی برای شانندن نهال (*qata-zamīnī baray-i šāndan-i nāl*) “a plot of land for planting saplings”.—Causat. fr. *šīstan*, q.v.

šāt (شهد) obs. = P. عسل honey.—v. Introduction, p. 9.

šāxī (شاخی) = P. سه شاخه pitchfork.—

šēr, *šīr* (شیر) = P. ببر tiger. v. Introduction, p. 6.

šērdān (شیردان) = P. شیر (*šīr*) tap.—

šifā-xāna (شفاخانه) H. = P. مریضخانه hospital.—

širkatu-t-tijāra (شرکت التجارة) T. = P. شرکت تجاری a commercial firm.—

šīstan (شستن) = P. نشستن to sit: *da dūkān šīsta* “he is sitting in (his) shop”.—Imp. *šīn* and *nīš*.—cf. Iv Rust. 255; LorPhon. 187a; 202 b.—

šīr v. *šēr*

šīrjūšāk (شیرجوشک) = P. پستانک feeding-bottle: C. شیر نوک *rābar-i šīrjūšāk* = P. پستانک “indiarubber teat”.—

šīryax (شیریخ) = P. بستنی ice-cream.—Prob. a mere translation fr. E.—

šīšam (شیشم) H. = P.the tree *Dalbergia sisu* and its wood (much used in manufactures) (Platts).—

štabrī, *ištabrī* (اشتری - شتری) E. = P. توت فرنگی strawberry.—Also *tūt-i štabrī*, where the prosthetic *i*-disappears owing

to the presence of the *izāfa*, which helps the articulation of the word.—

šūkur kašīdan (شکر کشیدن) = P. تشکر کردن to thank; to be thankful: AA. شکر میکشم “I am thankful”.—

šukustan, sukuštan (سکستن - شکستن) = P. شکستن (*šikastan*) to break.—

šumār kardan (شمار کردن) obs. = P. حساب کردن to count.—

šumāyān (شمایان) = P. شماها - شما you (when addressing several persons). v. Introduction, pp. 21-22.

šūar (شوهر) = P. شوهر (*šawhar*) husband. But LorPhon. 187a; 202b gives “*šauher*”; cf. also MorgTexts, 310 “*šawar*, husband”.—Syn. *šūy*, q.v.

šūr (شور) = P. مشورت deliberation; discussing (a question).—

šūrānīdan (شورانیدن) = P. بشورش تحریک کردن to make revolt; to incite to revolt: AA. این قبایل را برضد حکومت شورانیده است “he had incited those tribes to revolt against the government”.—

šūrīdan (شوریدن) obs. = P. شورش کردن to revolt.—

šūy (شوی) obs. = P. شوهر husband.—The word is more current in K. than its synonym *šūar*, q.v. cf. MorgTexts, 314 l. 6; 315 l. 4, etc.—

T

tab (تب) E. = P. طشت حمام *tub*.—

taberča (تبرچه) obs. = P. تبرچه axe, hatchet.—cf. MorgFront. 410a “*ta’bar* ‘axe’”.—

tabāšīr (تاباشیر) H. = P. گل سفید *chalk*. Skr. *tvakšīra* “sugar of bamboo” (Steingass), “manna of bamboo” (Platts).—The word occurs once also in Md. Amīn’s text: T. 364. l. 18 زهاب تاباشیر صبح.—Entirely unknown in P.—

tabīat (طبیعت) = P. احوال - حال health.—Same in H. In P., however, the word means only “temper; character”. v. Introduction, p. 44.

tahāna (تهانه) H. = P. قلعه a small fort; the head station of a district.—From H. *thāna*.—

tajrūbadārtar (OL. تجربه دارتر) = P. مجرب تر - بیشتر با تجربه more experienced.—

taklīf (تکلیف) = P. زحمت trouble.—In P. the word means “duty; what is incumbent; what must be done” تکلیف
چيست؟ or, by way of abbreviation تکلیف؟ is an expression often occurring in P. as a concluding formula in telegrams: “what is to be done?” or “what have I to do?” cf. also Phillott, Preface.—

talabistan (طلبستان) = P. خواستن to summon; to order (goods):
talabistum az bāzār “I have ordered (it) from the bazar”.—
The form *talabīdan* (طلبیدن obs. in P.) is also currently used. The expression *talab kardan* (طلب کردن) means in K. as in P. “to claim” (money, a debt, an indemnity, and the like).—Only the form طلبیدن occurs in our two Tāj. authors: ‘Abdul-Karīm p. 60 ll. 3, 7; Md. Amin T. 363 l. 19.—cf. LorPhon. 180b. who has got only “*talabīd*:—(*talab*?) to demand, seek in marriage”, etc.—cf. also Morg Front. 294a.—

tala kardan (تله کردن) H. = P. از جا برداشتن to push; to push off, to remove.—Prob. from H. تلا cf. Platts s.v.—

talak (تلک) = P. تله a trap (as mouse-trap, rat-trap).—

talaskūp (AA. تلسکوپ) E. = P. دور بین telescope.—

talāw (تلاب) H. = P. حوض - استنخ pond, cistern.—

tanxāh (تنخواه) = P. مواجب salary: *tanxāh xurdan* = P. مواجب گرفتن to receive a salary”.—In P. تنخواه means “goods”.—Md. Amin T. 329 l. 11 has got: اراضيه (sic) و تنخواه “Grundbesitz and Lehn”.—‘Abdul-Karīm’s text does not contain the word, but has in one instance the verb *xurdan* in connection with the P. equivalent of تنخواه: p. 9 l. 19 مواجب ميخورد; also in the same meaning p. 106 l. 18: علوفه خوار بودند “they were receiving rations”.—cf. Morg Front. 294b “*tan’-xāxūr* (sic!) ‘drawing pay’”.—

taqarrur (تقرر) T. ? = P. مقرر شدن - تعيين appointment, being appointed: AA, 3 حاکم درجه ۳ “appointment of governors of the 3rd class”.—

tarangan (ترنگان) P s h t. = P. طور گاه کشی net (for carrying straw, hay, etc., on donkeys).—Fr. P s h t. ترنگر *trangarr*.—cf. Morg Shugh. s.v. “*terāng* ‘girth’, etc.

tarbūz (تربوز) H. = P. هندوانه water-melon.—cf. Morg Shugh. p. 71.—

tarixi (OL. تاریخی) = P. ... مورخه dated In P. تاریخی means only "historical".—On the other hand, one finds on printed official letter-forms in K. the word مورخه taking the place of the P. expression بتاريخ "on the date of....."—

tarjumān (ترجمان) T. ? = P. مترجم interpreter, translator.—The K. form of the A. word is probably adopted from T., where it is the only word used in that sense (unless it is H. ?). The P. equivalent is also, though more seldom used in K., but then with the intercalation of an unnecessary vowel: v.s.v. supra. The A. root itself of the word, although decidedly Semitic, is probably a loan-word in A. (as seemingly also in Hebrew) and might prove to be of Aramaic extraction.—

tarkārī (ترکاری) = P. سبزیجات vegetables.—Obviously from تر "moist; fresh" and کاشتن "to sow".—

tarmayda (ترمیده) H. = P. آرد flour.—Syn. *mayda*, q.v.

taslīm kardan (تسلیم کردن) = P. شناختن to recognize: AA. "چون استقلال افغانستان را تمامی دولتمدنه تسلیم کرده اند" since all the civilized countries have recognized the independence of Afghanistan....."—

taslīm šudan (تسلیم شدن) = P. (1) مسلم شدن - واضح شدن - ظاهر شدن - to become clear, evident, obvious; (2) گرفتن - وصول نمودن - to receive (a letter, a sum of money, etc.) v. Introduction, pp. 32-33.

tašarruf (تشرف) T. ? = P. شرفیابی having the honour (to attend a function, to pay a call, etc.)—

tawānistān v. *tānistān*

tauba (توبه) H. = P. داد و بیداد alas!—An exclamation used on occasions when a European would swear.—

tayār (تیار - طیار) H. = P. حاضر ready.—Occurs once in 'Abdul-Karīm's text: p. 81 l. 11, and twice in Md. Amin: T. 339 l. 33 (note) and 363 l. 7.—cf. Morg Front. 296a; Morg Shugh. 72.—

taygar (تیگر) E. = P.bulldog.—Obviously the E. "Tiger".—

taylafūn (OL. تیلفون) = P. تلفون (*tilifūn*) F. telephone.—

tayxāna (ته خانه) = P. زیرزمین cellar; basement-room.—

tazkār (AA. تذکار) = P. یادآوری reminder; remembrance.—

tā al-hāl (AA. تا الحال) = P. تا بحال - تا حال until now.—

tā anūz (تا عنوز) = P. تا بحال - تا حال until now.—Syn. of the preceding.—

tā'ifawī (AA. طایفوی) = P. طائفه‌ئی (*tā'iféyi*) tribal.—

tāk (تاک) = P. درخت انگور vine.—cf. Morg Front. 293b.

tālibu-l-ilm (طالب العلم) = P. شاگرد مدرسه school-boy; student.—Syn. *muhassil*, q.v.

tānistān, *tawānistān* (توانستن) For its uses, v. Introduction, pp. 33-34.

tāqī, *tāqīn* (طاقی - طاقین) = P. عرقچین scull-cap.—Steingass gives it as Persian, but I have neither seen it in literature, nor heard in P. speech.—cf. Lor Phon. 181a; 196a; also Morg Shugh. 70 "*tā'kē* 'cap'".—

tār (تار) = P. (1) نخ sewing thread; (2) سیم تلگراف [telegraph-wire: *tār zadan* = P. تلگراف کردن "to wire" (probably, a translation fr. E.).—The word is good Persian, but is used in P. only for: (1) "warp"; (2) "string" (of a musical instrument); (3) (metonymic.) name of a kind of stringed musical instrument; (4) "cobweb". And it cannot be used in P. to designate either "thread" or "wire".—cf. Morg Front. 294b; 410b.—

tēy (تیغ) = P. تیغ (*tēy*) point (of any sharp instrument); sword.—

tēl (تیل) H. = P. روغن oil: *tēl-i bādām* (تیل بادام) almond-oil; *tēl-i xāk* (تیل خاک) = P. نفت kerosene-oil.—Fr. Skr. *tailam*.—

tēr kardan (تیر کردن) = P. عبور دادن to [make] pass.—

tēr šudan (تیر شدن) = P. عبور کردن to pass.—cf. Morg Front. 410b; Morg Texts 309.—

tēz (تیز) = P. (1) تیز (*tēz*) sharp.—cf. Morg Front. 296a; Morg Shugh. 72; (2) زد تند swift, quick.—cf. Lor Phon. 181a; 196a.—

tēzi (تیزی) = P. تندی - سرعت quickness; speed.—

tilgirām v. *tilgirām*

tiqir (تَقِر) T. ? = P. [گل دار] بَرهٔ تودایی skin of a dead-born lamb (with curls).—cf. supra *tisak*.—

tīkā, *kīkā* (تیکا - کیکا) = P. یواش slow, slowly. Prob. fr. Psht. *tīkāo* "rest, stay, staying, tarrying", etc. v. Raverty, s.v.

tīkis, tīkit (تیکس - تیکت) E. = P. (1) تیر F. [postage-] stamp;
(2) بلیط R. ticket.—

tīlgirām, tīlgirām (تلگرام - تیلگرام) = P. (تلگراف *tīlgirāf*) tele-
gram; wire; cable.—The form with the long -ī- seems
to be the officially recognised, as we find it in the headings
of the printed telegram-forms.—

tīt kardan (تیت کردن) = P. ریختن to scatter; to
throw down.—Prob. fr. Psht. تیت *tīt* “crooked, bent,
curved, bowed” or تیتول “verb trans. to bend, to curve”
etc. (Raverty, s.v.). Lor Phon. 157.—cf. also Lor
Phon. 196b.: “*tīt; tīt k.*, to put down”, etc.; Morg
Front. 295b.: “*tīt*, distributing, *tīt kan*—to distribute,
throw about”.—

tufang-i māšīndār (تفنگ ماشین دار) = P. توپ شصت تیر
machine-gun.—

tulabā (طلباء) = P. طلاب (*tullāb*) students.—An example of
an arbitrarily formed A. broken plural: it is obviously
meant to serve as a plur. for the sing. طالب [العلم] (v.
supra), but is in reality a plur. form of the adj. طلبیب,
which does not mean (in spite of Steingass s.v.)
“student” either in P. or K. (Steingass, besides, gives
himself for طلباء the only meaning “inquisitors”).—
In P., however, the sing. طالب is not used at all, its place
being taken by one of its plur.-forms—طلبه, which serves
as sing., whilst the second plur.-form of the word—طلاب
is used in its plural-meaning.—

tūrkiya (ترکیه) = P. عثمانی Turkey.—

tūl (طول) E. = P. طور (*tūr*) F. muslin.— E. “twill”.— F.
“tulle”.—

tūlmišr (تولیمشر) = P. سلطان captain (in the army).—

The first link of the compound seems to come fr. Psht.
تولی *tiolaey* “a company”, etc. (v. Raverty, s.v.), for
the second part of the word v. supra under *bulūkmišr*.—

tūl kardan (تول کردن) = P. وزن کردن - کشیدن to
weigh.—fr. H. cf. Skr. *tulāyami*; H. “tola”. cf. Morg
Front. 293b.

tūla (توله) ? = P. سوت whistle.—Syn. *išpīlāq*.

tūrkiya v. *turkiya*.

tūta (توتہ) = P. خردہ - ریزہ piece; bit; chip; small.—Prob.

- fr. Psht. *tōta* or *tūtankaey* "a shaving, a chip, a clip, a filing, a fragment" (Raverty).—
tūtā (طوطا) H. = P. طوطي (*tūṭī*) parrot.—
tūy (توی) T. = P. عروسی marriage; marriage-feast; wedding —
 I find it only once in 'AbdulKarīm's text, p. 83 l. 22.—cf. also MorgFront. 296a "*tū'yāna*, 'price paid for the bride'".—

U

- uṣūr* (اغور) T. ? = P. مارون - مارونگ mortar. cf. MorgFront. 232a who takes the word to be Persian. I do not know the word, and was unable to trace it.—
ūkum (حكم) = P. حکم (*ḥukm*) orders:—*ūkum nīst* = P. قدغن است "it is not allowed" (lit. "it is not ordered" or "it is against orders").
umayd (امید) = P. امید (*umīd-ummīd*) hope: *umayd mēkunum* = P. امید دارم or (more often) امیدوارم "I hope".—
 Note the unsound construction of an abstract noun expressing a state with an active verb.—
urūp (AA. اروپ) E. = P. اروپا (*ūrūpā*) R. Europe.—
urūsi (اروسی) = P. پنجره window.—cf. MorgFront. 388a, who gives it in the form *ur'sī* and classes it as Persian.—
 Syn. *kīlkīn*, q.v.
ūnā (sic: AA. اونها) = P. آنها they.—v. Introduction, p. 22.
ūšan (AA., OL. اوشان) = P. ایشان they.—The word occurs in that form not only in current speech (always), but also in writing and print (along, however, with the standard form).—

W

- wafā* (وفد) T. ? = P. هیئت mission; corporation.—
wāqit, *waqt* (وقت) = P. زود early: *ma waqt āmadum* (here the word loses its superfluous "euphonic" vowel before the vowel in the next word, which facilitates the pronunciation) "I came early";—*sabāh wāqit xāhīd raftan?* (here the additional vowel is preserved before a word beginning with a consonant) "will you go early in the morning?" or "will you go early to-morrow?"—Note the use of a noun in the sense of an adverb (or adjective); cf. for it *qīmat* s.v.—
waqtan ki (AA. وقتاً که) = P. در وقتیکه - وقتیکه at the time when.—

waqtan-waqtan (AA. وقتاً ووقتاً) = P. گاهی وگاهی from time to time.—

warxatā šudan (وړخطا شدن) = P. ترسیدن to get frightened.—

wādār dāštan (وادار داشتن) = P. مجبور کردن to compel.—

wār (وار) = P. ذرع yard.—cf. my “Afghan Weights and Measures” JASB. XXIV, 1928 No. 4, 421 note 1.—

wārnīs, wārnīš (وارنش - وارنس) E. = P. روغن varnish.—

wāzkit (وازکت) E. = P. جلزکته R. waistcoat.—cf. Lor Phon. 185b; Morg Front. 297b; 412a, who both record the word with an -s-. Yet the -z- is clearly heard in K., where the word is probably connected in popular etymology with *wāz* < *bāz* “open” and *kit* < *kot* “coat”.—

wuqūāt (وقوعات) = P. وقایع events: AA. وقوعات داخلیه (*wuqūāt-i dāxiliyya*) = P. وقایع داخله (*vaqāyī-i dāxila*) “home events”.—

X

xafa (خفه) = P. غمگین - ملول sorry, displeased, disappointed; sad; angry.—cf. Morg Front. 299a; 412b; Morg Texts 311 ll. 5, 6, 7, etc.—In P. the word means “strangled, suffocated”.—

xafak (خفک) = P. polecat.—

xalās (خلاص) = P. (1) تمام finished; out of stock; (2) خاموش gone out (fire): *jaw xalās šuda* “the barley is finished, out of stock”; *ataš xalās šuda* “the fire is gone out”.—

In P. خلاص شدن means only “to free oneself”, “to get rid (of something)”. The word does not occur in ‘Abdul-Karīm’s text in the sense attributed to it in K.—Nor has Platts got it in that sense.—cf. Morg Front. 299a; 412b; Morg Shugh. 76.—

xaliṣa (خلیفه) H. = P. استاد - استاد master (when addressing an artisan).—Syn. *mistrī*, q.v.—The word is used in P. only with reference to a “Christian priest” (besides its ordinary meaning of “caliph”).—

xalta (خورطه) = P. کیسه - همیان bag; leatherbag (for money); purse; wallet.—Used, though seldom, in P., but then with the correct pronunciation as *xarītē*.—

xamandūk (خمندوک) ? = P. خبردوک (*xabazdūk*) ? (Horn, p. 6) beetle; scolopendra, centipede; wood-louse (for which latter the words سوسک and خر خاکی are mostly used in P.)

xarkār (خرکار) = P. خرکچی a donkey-man; a donkey-driver.—

xarwālā (خروالا) H. = P. اولافي one who rides on a donkey ; donkey-man.—The suff. *-wālā* is borrowed from H. (“*-wallā*”). The difference between this word and the preceding is that *xarkār* denotes a professional donkey-driver, whereas *xarwālā*, a man occasionally connected with a donkey (for instance, seen riding on one etc.).—

xasta-xāna (خسته خانه) = P. مریض خانه hospital.—Syn. *šifā-xāna*, q.v.

xat (خط) = P. کاغذ letter: cf. Morg Front. 413a. In P. the word means “[calligraphical] handwriting”, also “a line”.—Syn. *kāz*, q.v.—

xākistardānī (خاکستردانی) = P. زبر سیگاری ash-pan.—

xāhān (خواهان) = P. طالب desirous: AA. که همه شان خواهان “who all of them are yearning for higher education”.—In P. the word is used in the meaning of “[well-] wisher” or “[well-] wishing” only.—

xāna (خانه) = P. اطاق - اطاق room.—

The word means in P. only “house”. The P. equivalent of the word is, however, sometimes encountered in K. newspaper-articles, probably in such as are integrally reprinted from P. newspapers: AA. يك اطاق تجارتي “a chamber of commerce”.—

I find the word in ‘Abdul-Karīm’s text only once: p. 38 l. 21 in the sentence already quoted supra s.v. *mā-bayn*, q.v. Lor Phon 178b. and 193b. records, however, the word with the meanings “house” and “house. home”.—So also Morg Front. 299b.

xāna-i nān-xurī (خانه نان خوری) = P. سفره خانه dining-room.—Syn. *xāna-i taām*, q.v.

xāna-i šīstan (خانه شستن) = P. اطاق پذیرائی - F. مالون sitting-room; drawing-room; reception-room.—Probably a mere translation from E.

xāna-i taām (خانه طعام) = P. سفره خانه dining-room. Syn. *xāna-i nān-xurī*.

xāna-i xāw (خانه خواب) = P. اطاق خوابگاه bedroom.—There is no real division of rooms according to their uses either in Persia or in Afghanistan, except into the “outer” (*bīrūn*) and “inner” (*andarūn*) parts of the house: one eats in whichever room one likes, and one sleeps where one has eaten in an average house in these two countries. This

expression, as also the three preceding expressions, are therefore neologisms which have arisen to meet the requirements of the new ideas imported in the two countries by foreigners—in Persia somewhat earlier, in Afghanistan quite recently. It is interesting to compare with each other the forms assumed by these neologisms in the two countries expressing so differently the same ideas, in practically the same language.—

xārpišang (خار پیشنگ) = P. hedgehog. Obviously for *xār-pīšak* “thorny cat”. cf. for the -n- Iv Kurd. 231 “*pesing*, cat” (already quoted supra s.v. *pīšak*, q.v.), which is the only other instance known to me of that word being pronounced or spelt with an -n- in the final syllable.—

xāš (خاش) ? = P. دم tail.—

xāw (خواب) = P. خواب (*xāb*) sleep; dream.—

xēl (خیل) Psht. = P. ایل tribe; clan.—

The A. collective noun means originally “horses; horse-men; cavalry.” In Psht. the word has been adopted to denote the different Afghan tribes, and is used in K. chiefly as the second part of a compound, the first link of which is the name of a tribe, e.g., *Sulaymān-xē* (سليمان خیل). The K. pronunciation of the word, with a *yā-yi majhūl* instead of the A. diphthong, must be very old, cf. for it Horn, p. 33; Geiger, p. 314; cf. also my translation of Noeldeke’s “Iranian National Epic”, Journal of the K.R. Cama Oriental Institute, No. 6, 1925, p. 157 note 1.—

xidmatgar (خدمتگر) H.=P. پیشخدمت servant; valet.—The word خدمتگار (with a long -ā-) means in P. “a maid-servant; a maid”, and cannot be applied to a male domestic.—

xīstan (خيستن) = P. بر خاستن to get up: *ma az xāw xīstum* “I awoke” (lit. “I got up from sleep).—cf. Iv Birj. 270 note 5; Morg Front. 301a.

xuār (خواهر) = P. خواهر (*xāhar*) sister.—cf. Lor Phon. 178b; 194a; also Morg Front. 413a; Morg Texts 309 note 2.—

xud, *xu* (خود) = P. (1) خود self; same; (2) که all the same; but: *tu xu jūr asti* ? = P. حالان که خوبست “but your health is all right ?”—In K. speech the word (or particle) occurs continually without any particular meaning being attributed to it except stressing the sense of the phrase in

which it occurs. A reverse, *i.e.* a moderative effect is obtained in K. by using the adverbial expression *gūyā* "Idaresay", which is also extremely current and repeated by some individuals almost after every word they pronounce.—cf. Iv Birj. 269 No. 7 l. 8; 304 No. 126; 305 No. 129.—cf. also Morg Front. 298b.—

xudhā (خودها) = P. خودشان themselves.—In P. this pronoun has no plural form.—

xunuk (خنک) = P. سرد سرما cold.—In P. the word means "cool, fresh", and is applied to coolness of a pleasant character (in summer). In K. *xunuk* is used indiscriminately to denote any kind (and degree) of cold, more especially a rigorous cold of an unpleasant character (in winter).

I find one instance of the word *xunuk* being used as in K. in Abdul-Karīm's text p. 89 l. 1/2; زمستان بسیار خنک "a very cold winter."—cf. Lor Phon. 178b; 194a; Morg Front. 299b; Morg Texts, 325 l. 4.—

xurāka (خوراکه) = P. (1) علیق fodder; (2) خوراک food: AA. نگهداشت حیوانات و خوراکه آن "the keeping of cattle and their fodder".—

xurd (خرد - خورد sic) = P. کوچک little, small: *bačča-i xurd* = P. طفل کوچک "a small child".—In P. خرد (opp. درشت "coarse, big") means "minute, fine", as applied generically to homogeneous substances (like grain, flour, sand) or vegetables of one kind (like potatoes, apples etc.) or any other uniform commodities (like charcoal, etc.), but never individually. The word کوچک seems to be unknown in K. Anyhow, I have never heard it used in speech, nor seen it in writing.—Abdul-Karīm's text contains it once, p. 91 l. 9: شش نفر از خرد و کلان Md. Amin uses, however, the P. word, T. 341 l. 37: کوچک حیوان.—cf. Lor Phon. 194a.—

Y

yakum (یکم) = P. اول the first: شماره یکم "No. 1" ("Anīs").
yala kardan (به دل کردن) = P. به دل کردن to let go; to let loose; to leave alone.—cf. Iv Birj. 270 No. 9 l. 2 "yallā bu"; cf. Lor Phon. 195b "yalā, open"; also Morg Front. 301 "ya'lā 'let loose, free'; Morg Texts 313 l. 10 "ilā' kat"; p. 319 l. 11/12 "elā kat". The final -a in this word sounds, in fact, very much like a long ā, but it is not. cf. also Steingass, s.v.—

yax (یخ) = P. سرد cold.—

The word means in P. only “ice, iced”, but might sometimes impart the idea of “freezing”: یخ بستن “to freeze” (of a river, a pond, etc.); یخ کردن “to freeze” (of hands, etc.).—It is also, naturally, used in K. in its standard meaning of ice: cf. *Lor Phon.* 195b.—*Morg Front.* 413b. *Morg Shugh.* 78; *Morg Texts* 325 l. 11 translates correctly “the frost has struck us”.—

yaxan (یخن) = P. یخه - یقه collar. v. Introduction, pp. 11-12.
yilām v. *lilām*.

Z

zambēl, zambīl (زنبیل - زنبیل) = P. تخت روان palanquin.—Corr. of زن بر *zan-bar*, lit. “woman-carrier”.—

zamīn-larza (زمین لرزه) = P. زلزله earthquake.—*Morg Front.*

302 records the P. equivalent for Parachi, but *Morg Shugh.* 78 has got a most interesting parallel compound “*zamīn-jumb*”.—

zanāšūyī (زناشوئی) = P. ازدواج matrimony, wedlock.—

zanjabīl (زنجبیل) = P. زنجفیل ginger.—Syn. *adrak* q.v.—

zan-talāq (زن طلاق) = P. قرامساق a [voluntary] cuckold.—A term of gross abuse, not known in P.—

zardak (زردک) = P. هویج carrot.—cf. *Psht.* زردکه *zardaka'h* (v. Ravery, s.v.); also *Steingass* s.v. The word in *Psht.* is probably borrowed fr. K.—

Br Dial. 794 gives the word as Persian in explanation of the dialect. گزر, but it is not clear, whether the gloss is his own or quoted by him from the Ms. he is dealing with. cf. *Iv Birj.* 343, who explains it, however, as “a sort of beet-root”; but cf. *Morg Front.* 303a.—

zarūrī (ضروری) = P. لازم (1) necessary; (2) فوری urgent: *barā-i mān zarūrī* as “it is necessary for us”; *ī xat zarūrī* as “this letter is urgent”.—In P. that word, if ever used, could be only understood as a noun: “lavatory, latrines”.

zābit (ضابط) T. = P. سرباز soldier.—Obviously of recent importation from Turkey.—Syns. *askar, laškar, sipāh*, q.v.

zād kardan } (زاد کردن) = P. زائیدن to give birth.—Another instance of the splitting of verbs, so current in K., v. Introduction, pp. 28-29. *Lor Phon.* 187b and 203a has, however, got “*zoi.īd-zoi(y)*”, to give birth to”.—

zānūxam (زانو خم) = P. زانوئی (*zānūyī*) knee (of a water-pipe).—

zār (زهر) = P. زهر (*zahr*) poison.

zāt kardan v. *zād kardan*.

zirāat-i lalimī (زراعت للمی) = P. زراعت دیمی natural agriculture (i.e. without artificial water-supply).—From Psht.: cf. Raverty s.v., also Morg Voc. 36 “*lalimī* growing naturally, ‘not irrigated’”, etc.

zīna (زینه) = P. (1) نردبان pop. نوردان ladder; (2) پلکان staircase.—Bartholomae (Zur Kenntniss d. mittelliranischen Mundarten, I, Sitzb HAW., 1916 pp. 45–47) discusses at length the Pahl. word *ūzēnak*, for which he gives the reading *uzēnak* and two meanings (1) exit (“Ausgang”) and (2) ascent or ascension (“Aufgang”) and derives from it (1) هزینه “expenditure”, and (2) زینه “ladder” or “staircase”. He is, however, not aware of the existence of such a word in colloquial Tājīkī and thinks it to be a mere “dictionary word”, without any example (‘ohne Beleg’) in literature”.—He further expresses the opinion that the H. زینه is un-Indian, and must be the same word borrowed from Persian (ibid. p. 47).—

Md. Amin has not got the word, and uses instead of it its P. equivalent: T. 365 l. 12.—

cf. also Iv Birj. 343, who explains it, however, as “the lowest step of the staircase”.—

zīna-i ēstāda (lit. “standing staircase”) is also used in the meaning of “staircase”, as opposed to “ladder”.—cf. Lor Phon. 187b; cf. also Morg Front. 303a.

zulfī (زلفی) H. = P. زنجیر در - حلقه door-chain; ring (of a door).—cf. H. “a door-chain to keep the door from being lifted from its place (sic!); chain-hinges” (Fallon, s.v.)

zūf (ضف) = P. ضعف (*zaʿf*) weakness.—Both vocalisations are, of course, admissible in A., without affecting the meaning of the word, but the one used in P. seems to be foreign to K., which, in its turn, is entirely unknown in Persia.—

Z

zāl (زال) = P. تگرگ hail.—In P. the word (more usually in its fuller form زاله) means “hoar-frost”.—cf. Iv Birj. 340 “*jularw*, *jōla*, *zhōla* (LP. *zhāla*), hail stone”; also Lor Phon. 179b. “*jāla*, hail”, 187b. “*zāla* (?), v. *jāla*”, and 195b “*jōla*, hail”; Morg Front. 262a has got “*jāla*, *zāla*”, and 397a “*jāʿlī*”.—

STRAY NOTES ON KĀBULĪ PERSIAN.

L. BOGDANOV.

(JPASB, Vol. XXVI, 1930.)

CORRIGENDA.

p. 6 l. 26	.. <i>bi-</i>	.. read <i>bi-</i>
p. 8 l. 12	.. "down"	.. ,, "dawn"
p. 17 l. 17	.. Pefect-Participle	.. ,, Perfect Participle
p. 18 l. 5	.. ژاين	.. ,, ژاين
p. 20 l. 14 fr. bel.	has it once	.. ,, has once
p. 24 l. 24	.. <i>kāsī nabūt</i>	.. ,, <i>kāsī nabūt</i>
p. 25 l. 9	.. <i>mēšava, mišava</i>	.. ,, <i>mēšawa, mišawa</i>
p. 30 l. 15	.. <i>mēšava</i>	.. ,, <i>mēšawa</i>
p. 35 l. 17	.. <i>ālā'azrat-</i>	.. ,, <i>ālā'azrat-</i>
„ „	.. على حضرت	.. ,, اعلى حضرت
p. 41 l. 15	.. (pop. for بواسطه)	.. ,, (not to be confused with the A. بواسطه)
p. 62 l. 17	.. <i>ba-šumar</i>	.. ,, <i>ba-šumār</i>
p. 75 l. 14	.. <i>farvari</i>	.. ,, <i>farvarī</i>
p. 82 l. 22	.. <i>jūdāgāna</i>	.. ,, <i>jūdāgāna</i>
p. 95 l. 12	.. <i>muharaba-</i>	.. ,, <i>muhāraba-</i>
p. 100 l. 26	.. تبع	.. ,, تبع
p. 102 l. 28	.. <i>pura</i> ..	.. ,, <i>pura</i> ,
p. 111 l. 12	.. <i>sāyāsī</i> ..	.. ,, <i>šāyāsī</i>
p. 120 l. 22	.. <i>Sulaymān-xē</i>	.. ,, <i>Sulaymān-xēl</i>
p. 122 l. 21	.. P. هويج	.. ,, P. هويج or هويج



Animadversiones Indicae.

By GIUSEPPE TUCCI.

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I

ON MAITREYA, THE YOGĀCĀRA DOCTOR

Professor UI¹ has in a series of studies pointed out that no doubt is possible concerning the historical existence of Maitreya who was the master of Asaṅga and was himself the author of many works. He supported his view by references to the Chinese translations of some Buddhist texts. It will not be useless to quote here some new sources, which quite agree with his opinion.

(I) The commentary of Sthiramati upon the Madhyānta-vibhāga.²

The manuscript of this text has been found, though in a very damaged condition, in Nepal and is being edited, with a complete restoration into Sanskrit from the Tibetan of all the missing passages, by me and my friend Vidhuśekhara Bhaṭṭācārya. The author begins by commenting upon the introductory stanza of the *vytti* of Vasubandhu on the *kārikās* of Maitreya, which runs thus in Chinese:

¹ *Studies in Indian Philosophy* (in Japanese) I p. 359 ff. *On the author of the Mahāyāna-sūtrālaṅkāra* (Zeitschrift für Indologie und Iranistik. VI, 2, 215). *Maitreya as an historical personage*. (Indian studies in honor of Charles Rockwell Lanman, p. 95 ff).

² This is the actual reading of the MSS., but in the Tibetan translation we have: *vibhāga*. Special thanks of the author of these notes and of Buddhist scholars as well must be expressed to His Holiness Śrī Hemarāja Sarmā, guru of His Highness the Mahārāja of Nepal, for having succeeded in getting the MS. of this work and having allowed me to make a copy of it.

恭 敬 善 行 子 能 造 此 正 論
爲 我 等 宣 說 今 當 顯 此 義

and thus in Tibetan :—

བསྐྱེད་བཅོས་འདི་ནི་རབ་མཛོད་པ།

བདེ་གཤེགས་ཉིད་སྐྱེས་བདག་སོགས་ལ།

འཆད་བ་ལ་ཡང་མངོན་མཛོད་ནས།

དོན་ནས་དབྱེ་ཕྱིར་འབད་པར་བྱ།

It can be restored with the help of the quotations scattered throughout the commentary of Sthiramati in the following way :

[*tacch s'āstrasyāśya prañetāram abhyarhya sugatātmaṃ vaktāram cāsmādādibhyo yatisye 'rthavivecane*].

Here Sthiramati makes the following remarks :

asya kārīkāśāstrasyārya maitreyaḥ prañetā vaktāram iti ; sa punar āryāsāṅga ; tatāryamāi treyādhiṣṭhānād dharme[na paramparayā śāstram idam prādurbhūtam ucyate].

(II) Then Haribhadra, in his big Abhisamayālaṅkāra-loka, which is at the same time the commentary upon the Aṣṭasāhasrikā-prajñāpāramitā and the Abhisamayālaṅkāra-kārīkā of Maitreya, confirms that the tradition was always current in India that Maitreya was a historical personage and writer of many treatises; we read in fact on page 73 of my edition: ¹

“*Vidita-samasta-pravacanā'rtho labdhā'dhigamo'py āryāsāṅgaḥ punarukta-bāhulyenā'punaruktapradeśe'pi pratyeka-pada-vyavacchedā'darśanena gāmbhīryāc ca prajñāpāramitārtham unnetum aśakto daurmanasyam anuprāptas tam uddiśya Maitreyena Bhagavatā prajñāpāramitā-sūtram vyākhyātam abhisamayālaṅkāra-kārīkāśāstram ca kṛtam.*”

The same thing is stated in the introductory verses of the same work, where we read :

Maitreyena dāyāvātā Bhagavatā netum svayam sarvathā prajñāpāramitānaye sphutatarā ṭikā kṛtā kārīkā.

¹ Published in Gaekwad's Oriental Series. The first volume containing the text will be out, I hope, shortly; then, a second volume will follow in which the life of Haribhadra, his works and the contents of the Abhisamaya will be discussed in detail and compared with the mystic theories of other schools. The historicity of Maitreya is supported by Tib. tradition.

In this connection, it will not be out of place to refer once more to the well-known passage of Subandhu's Vāsavadattā on the meaning of which many theories have been advanced.

"*Nyāyatattvam iva Uddiyotakarasarūpam bauddhasaṅgītim ivālaṅkārahūṣitām.*"¹ The relation expressed here is not between two different works such as Mahāyānasūtrālaṅkāra and Mahāyānābhidharmasaṅgīti of Asaṅga (theory of Prof. Sylvain Levi)² nor between the Buddhist canonical books in general and some kind of explanatory literature (theory of Prof. Lüders).³ In the first part we have quite a clear relation expressed between the Nyāyasūtras and a particular commentary upon it, viz., that of Uddiyotakara; we must therefore logically infer that in the second case also allusion is made to some particular texts, one being the *mūlasūtra* and the other a commentary. Now, we know that although *saṅgīti* is any sūtra beginning with the introductory formula: "*evaṃ mayā śrutam*" ("*Evaṃ mayā śrutam iti kṛtvā bhikṣavo mama dharmāḥ saṅgītavyaḥ.*") still no other sūtra had, during the great blossoming of Mahāyāna, such a great diffusion and notoriety as the Prajñāpāramitā in its various redactions. Maitreya was the first to write a commentary upon it called the *Pañcaviṃśatisāhasrikāprajñāpāramitopadeśa-bhīṣamayālaṅkārasāstra*, which, together with the kārikas of the Mahāyānasūtrālaṅkāra written also by him and commented upon by Asaṅga, gives us a fairly good idea of what an *alaṅkāra* (*bauddhasāstra* according to the commentator Narasiṃha) must have been, viz., a metrical commentary, the purpose of which was to classify, to discriminate and to harmonise the various doctrines expounded in the Mahāyānasūtras and to establish, at the same time, the foundations of the new dogmatics.⁴ And the Abhisamayālaṅkāra enjoyed a notoriety as other texts can hardly claim. It was commented upon by Asaṅga, Vasubandhu, Bhaddanta Vimuktisena, Āryavimuktisena,⁵ Haribhadra and it represents the foundation of the mystical theories and practices of the Yogācāras as well as of the Buddhist Tantrics of India and Tibet. Just as Subandhu refers to such a notorious work as Uddiyotakara's vārttika, we should expect that in the second instance also, as I pointed out before, he alluded to some other

¹ P. 235 (Bibl. Indica ed.).

² Introduction to the translation of Asaṅga's *Sūtrālaṅkāra* p. 16.

³ *Bruchstücke der Kalpanāmaṇḍitikā des Kumāralāta* p. 28-29

⁴ The more I study the works of Maitreya the greater it seems to me to have been his work. It was in fact a very difficult task to combine the often, at least apparently, contradictory statements of the *Sūtras*, and also to give a consequential and logical order of the topics discussed in them, with so many repetitions, and such a great redundancy. Still this was necessary, when the mahāyāna masters wanted to support their views with the authority of the *āgamas*. The position of Maitreya is discussed by me in the introductory volume of the *Abhisamaya*.

⁵ A manuscript of his work has been brought by me from Nepal and is being edited.

well-known work; the Abhisamaya quite well fulfils this condition, chiefly when we consider that the comparison implies necessarily a philosophical work even in the second case. Nor will it be out of place to remember that the association of Uddyotakara with the Bauddhaśāstra is not absolutely arbitrary. Uddyotakara wrote his work in order to refute Diñnāga and his teachings and Diñnāga, besides writing his treatises on nyāya, composed also a metrical commentary on the Aṣṭasāhasrikā-prajñāpāramitā following the model of the Abhisamaya.¹

II

THE FIRST MENTION OF TANTRIC SCHOOLS

Very little attention has been paid up till now to Tantric literature; and yet, apart from some exceptions, the Tantras contain almost nothing which can justify the sweeping judgment of some scholars who maintain that they represent the most degenerated form of Indian speculation. On the other hand, after a careful study, I cannot help seeing in them one of the highest expressions of Indian mysticism, which may appear to us rather strange in its outward form, chiefly because we do not always understand the symbolical language in which they are written. Moreover, they are an unparalleled source of information to the ethnologist as well as to the historian, and when properly studied they will shed a great light upon some ignored aspects of Hindu civilization and upon the manifold elements of which this is the outcome. The rule once prevalent among the Tantric, viz., "*kulapustakāni gopāyet*" has no value to-day and a good deal of Tantric literature is accessible to scholars, which, however, represent but a small part of the enormous material still awaiting publication. Its investigation is an urgent task of oriental scholarship. But not only I disagree from many of my western colleagues, so far as the general appreciation of the Tantras is concerned, but also as regards other points, and chiefly the antiquity of Tantric literature. The opinion generally accepted is that they originated about the VII century A.D.² The first objection to this theory is that many buddhist texts which were considered as sūtra's and are now incorporated into the Sannipāta or Mahāsannipāta class of the Chinese Canon, contain many an element which is characteristically tantric, such as *mantras*, their symbolic value, the acceptance of Hindu gods and goddesses, the necessity of *abhi-*

¹ This work is preserved in Chinese as well as in Tibetan and quotations from it are to be found in Abhisamayālaṅkāśāloka, Dharmasamgraha, etc.

² WINTERNITZ, *Geschichte der indischen Literatur*. I Band. p. 482, KERN, *Der Buddhismus*, II. p. 525 f. But see the sound remarks by PRZYLUCKI in BEFEO, XXIII. p. 317.

śeka, etc. But many of these texts which, though they cannot be considered as real tantras, show the influence of tantric ideas and rituals, were translated into Chinese before the seventh century A.D.¹ I quote as a characteristic example the *Suvarṇa-prabhāśasūtra* which is quite tantric in its contents, formulae, and rites and which was first translated by "Dharmakṣema (first half of the fifth century, A.D.) or the *Mahāmāyūrī-vidyārājñī*, absolutely tantric, already translated by Kumāra-rajiva.² But leaving aside this question which cannot be fully studied within the limits of a brief note, I wish to point out some old passages which seem to testify to the existence of Tantric schools at any early date. In *Tattvasiddhīsāstra* by Harivarman (IV cent. A.D.) and in the *Madhyāntānugama-sāstra* by Asaṅga³ there is an allusion to a school called

若耶須摩 *na ya siu mo*. No definite reference is to be found in that passage to the theories peculiar to the sect; but in Harivarman's work it is said that they admitted the existence of 16 *padārthas* and in *Madhyāntānugama-sāstra* they are quoted after the Maheśvara school and in connection with logical theories concerning the validity of a *hetu*. This fact led Prof. Ui to think that these *na ya siu mo* might have some connection with the *nyāya*, the relation of which with the *Īśvaravāda* (*śiva*) can be traced to an early date.⁴ But Ki-tsang commenting upon the *Satasāstra* of Āryadeva identifies them with the Jñātiputras, Nātaputtas, who are generally considered as a school of the Nirgranthas, viz., the Jainas, and in accordance with Harivarman, attributes sixteen topics to them. These topics as I have shown elsewhere, are the following: (a) eight derived from "hearing-knowledge"

聞慧生 *śrutajñāna*, viz., (1) astronomy and geography, (2) arithmetics, (3) medicine, (4) *mantras*, (5-8) four vedas; (b) eight derived from a "cultivation-mind" 修慧生 (*bhāvanā*?) (1-6) cultivation of the six divine practices, (7) cultivation of the worship of the stars, planets, gods, (8) cultivation of the practice of the ṛṣis. We cannot say how far the information

¹ The evolution of the text of the Āryamañjuśrīmūla-tantra, well illustrated by Prof. Przyluski, art. cit., is highly instructive. Even if many tantras were originally considered as sūtras and many among them always retained the form of a *Saṅgīti*, there is no doubt that, so far as their contents are concerned, they must be ranged among the Tantras.

² For this work, various redactions of which are known, see S. LEVI, J.A., 1915, p. 19.

³ Both the works are lost in Sanskrit, but their translation is to be found in the Chinese Canon.

⁴ The passages have been already referred to by me in: *Predinnāga Buddhist Texts on logic from Chinese sources*, Introduction.

of Ki-tsang is right, but the fact remains that these *padārthas* have nothing in common with the Jinas, nor do they show any relation with the sixteen *padārthas* of the Nyāyasūtras. On the other hand the reference to *mantras*, medicine, worship¹ of stars, planets, etc., even if not necessarily suggesting some connection with the Tantras, points out, at least, some practices or doctrines which were not absent in them. Even the allusion to the four Vedas does not exclude the possibility that we are here concerned with some reference to Tantric doctrines. It is known, in fact, that though the Tantras were sometimes considered as being heterodox, *bāhya*, still the Tantrics themselves generally admitted the authority of the Vedas, four in number, (and often recognising the supremacy of the Atharvaveda over the others)² though assuming that in the *kaliyuga* the Tantras afford the easiest way to *mukti*.

But is there any positive ground to affirm that in the *Nayasinmo*:- **Nyāyasauma* **Nayasamyā* **Nayasauma*, we have undoubtedly a reference to Tantric schools? Let us begin with the *Saumas* or *Saumyas*. Though we cannot gather very much from the *lexica*, still, reference to them can be found in Sanskrit literature and of such a kind as to support our view.

(a) Raghūttama in his *Bhāṣyacandra* on *Nyāyabhāṣya* quoted the *Saumya* as a *bāhya siddhānta* (Nyāyadarśana ed. by Gaṅgānātha Jhā, Chowkhamba Sanskrit Series p. 30) *Cārvāka-sauma-saṅgata-jīnā-rhata-digambarāḥ śaḍ bāhyāḥ siddhāntāḥ*.

(b) *na vindanti padam śāntam śailānām nīkalam gurum |
samvādayanti ye kecit pāpam* ³ *Vaiśeṣikās tathā ||
bauddhās tv arihantā ye somasiddhāntavādinaḥ |
mīmāṃsāḥ pañcaśrotas ca vāmasiddhāntadakṣiṇāḥ ||*

This passage is taken from the *Akulavīratāntra* revealed by Minanātha and preserved in a MS. in the Durbar Library of Katmandu. The passage was first communicated to me by Prof. Bagchi and, then, by His Holiness Hemarāja Śarmā (*guru* to His Highness the Mahārāja of Nepal) whose knowledge of the Tantric literature I had the privilege to admire during my stay in Nepal and who was so kind as to explain to me some difficult portions of the *Tantrasāra* of Abhinavagupta. He also pointed out to me in a long letter from Katmandu dated 29. X. 29 the two commentaries on the *Prabodhacandrodaya* which are not accessible to me and are reproduced in the following item as written in his letter.

¹ Even the number 16, as is known, plays a great part in Tantric lore see my: *Tracce di culto lunare nell' India antica* Rivista di Studi Orientali; Roma, 1930.

² Cf. *Rudrayāmala* p. 130, 130, 146. On the non-vedic character of Tantras, see Lakṣmīdhara's com. on *Saundaryalaharī*, p. 81.

³ This is the reading of His Holiness Śrī Hemarāja Śarmā; but Prof. Bagchi reads *nyāya*. On *Somasiddhānta* cp. GOPINATH RAO, *Hindu Iconography*, Vol. II, p. I, pp. 20 and 24.

(c) *Prabodhacandrodaya. Act. III*

eṣa purastāt Somasiddhāntaḥ |
(tataḥ praviśati kāpālikarūpadhārī somasiddhāntaḥ)
narāsthimālīkr̥tacārubhūṣaṇaḥ smaśānavāsi nṛkapālabbho-
janaḥ |
paśyāmi yogāñjanaśuddhacakṣuṣā jagan mitho bhinnam
abhinnam īśvarāt ||
mastīśkāntravasābhīpūritamahāmāmsāhutīr juhvātām
vahnau brahmakapālakaṭpitāsurāpānena naḥ pāraṇā |
sadyaḥ kṛtakathorakanīhaviḡalatkīlāladhārojjvalair arcyo
naḥ puruṣopahārabalibhir devo mahābhairavaḥ ||
etat karālakaravālanikṛttakanṭhanāloccaladbahulaphenilu-
budbudauḡhaiḥ |
sārdham dāmaḡdamarudāṅkṛtidhūtābhūtavargeṇa bhargagṛhi-
nīm rudhīrair dhinomi ||
idaṃ pavītram amṛtam pīyatām bhavabheṣajam | paśupāśasa-
mucchadukṛtṛaṇam bhairavoditam ||

Rucikarāṭikā; sahomayā vartate Somaḥ tasya siddhānta
Somasiddhāntaḥ. gaurīmahādevābhyām bhairavabhairavīmūrti-
bhyām vedamārgaparityāgīyīsurān pravartayitum ayaṃ sid-
dhāntaḥ kṛtaḥ, Karpūramañjarigranthe Bhairavānanda etad
upañvako'py tadvimśatibhedabhinnaḥ. tatraiva dākinīyakṣiṇi-
prabhrtīnām antarbhāvaḥ.

Prakāśaṭikā; asmākam brahmarandhropalakṣitaḥ kapālo
brahmakapālāḥ. Tantra kalpitā vidyamānī surā cāndrī, tasyāḥ
pānena pāraṇā vratasamāptiḥ. ata evāyam Umayā sahitaḥ somas
tasya siddhāntaḥ.

Canṭrikā; Umayā sahitaḥ somo yathā Pārvatīyā saha Kailāse
modate, tadvad bhaktaḥ pārvatītulyakāntayā sahita īśvaraveṣa-
dhārī saṁ Kailāse sa iva modate.

(d) Then in the *Āgamaprāmāṇya* by Yāmunācārya, the *guru*
 of Rāmānuja, we read the following passage which supports
 our view even more evidently than the others. (Reprint from
 "The Pandit" p. 26.)

śaivam pāśupatam caiva bauddham apy ārhatam tathā |
kāpālam pañcarātram cety evam pāśandatā smṛteḥ ||
vaiddikam tāntrikam ceti vibhāḡakaraṇād api |
gamyate pañcarātrasya vedabāhyatvanīscayaḥ ||
śaivam pāśupatam saumyam lāḡudam ca caturvidham |
tantrabhedāḥ samuddiṣṭaḥ saṅkaram na samācaret ||

There is, therefore, no doubt that the Somasiddhānta re-
 presented a Tantric sect, to be identified with the Kāpālikās, and
 that the existence of this school can be proved as early as the
 time of Harivarman and Asaṅga. It appears also from the com-
 mentaries upon Prabodhac, that they practised rites similar to
 those of the sahaḡiyā sect. They were in the beginning and
 remained all throughout a Śaiva sect, but traces of contamina-

tion with the Buddhist Siddhas can be found in the extant literature. In fact in the *Śābaratantra* we have a list of twenty-four Kāpālikās, 12 *gurus*, or rather 12 forms of Śiva as *guru*, and 12 *sisyas*; among these it is easy to recognize the names of well-known Siddhas as they appear in the Buddhist tradition; Nāgārjuna, Minanātha, Carpata. This can easily be seen in the following table taken from the *Śābaratantra* ¹.

LIST OF THE 24 KĀPĀLIKĀS

1	ādinātha	13	nāgārjuna.
2	anādi	14	jadabharata.
3	kāla.	15	hariścandra.
4	atikālaka.	16	satyanātha.
5	karāla	17	minanātha.
6	vikarāla	18	gorakṣa
7	mahākāla.	19	carpata
8	kālabhairavanātha.	20	avadya
9	batuka.	21	vairāgya
10	bhūtanātha	22	kanthadhārin
11	viranātha	23	jalandhara
12	śrikantha	24	malayārjuna.

As regards the other part of the term *na ya siu mo* which may go back to a form *nyāya* ² or *naya* it is known that *naya* was the name of a very old section or group of Tantras. I refer here to the *Nayasūtra* which is a section of the *Nisvāsattvasaṃkhitā*, an old manuscript of which, written in the transitional *gupta*-characters, is preserved in the Durbar Library of Nepal and has been described by Haraprasāda Śāstri in his *Nepal Catalogue*.³

III

ON THE NAMES MĪNANĀTHA AND MATSYENDRANĀTHA

It is known that one of the greatest Siddhas, viz., those mystics who tried to harmonise Mahāyāna Buddhism and Hinduism and are supposed to have been eighty-four in number, is said to have been Matsyendranātha. In the Tibetan Grub-tob as well as in the old Bengali Gorakṣavijaya some legends

¹ The *Śābaratantra* does not seem to be very old, but it is highly interesting for the study of Indian folklore since it contains formulae in Arabic and reference to a Mohamedan Siddha called Ismail Pir-Isma'il yogin. Edition in Bengali characters in the monthly magazine *Arunodaya*. The same passage with better readings is quoted in *Gorakṣa-siddhāntasaṅgraha* p. 16-19, where the interesting information is given that the 24 kāpālikās were created by Nātha (Śiva) in order to combat the twenty-four avatāras of Viṣṇu, when Paraśurāma had killed the kṣatriyas.

² The two forms, *naya* and *nyāya*, as is known can be interchanged. So far as the Chinese transcription is concerned the character corresponds to ja, jā, jñā nñā nā nā (in prācritisms from scr. *nya*). The *Nayottara* has recently been the object of a diligent study by Prof. Bagchi, *IHQ*, Vol. V, p. 754.

³ Vol. I. P. 138 ff.

are narrated for the explanation of this strange name;¹ but it seems natural to suppose that these traditions do not contain anything historical, but were rather invented on the basis of the name itself. In other words, it is the name which gave birth to the legend and not a particular event which was the origin of the name. Moreover, it is a surprising fact that Matsyendranātha and Minanātha are mere synonyms and, strange enough, in some lists one is said to have been the son of the other.² So it may be doubted whether in this case we are concerned with personal names or rather with a title or appellative of a special class of yogis. In the Tantric schools there were special designations for certain stages reached by the initiated or for particular conditions of life that the adepts had chosen; so we have the *avadhūta* in the Śaiva sects, the *Vajrācārya* or the *Pūrṇaprajña* in the Buddhist schools; names like these are essentially initiation names showing a well-defined stage of holiness, though they may become—and in fact later on became—personal names. That this was the case with the name Matsyendranātha seems to be indicated by the fact that the Grubt'ob considers Matsyendra as another name for Lui-pā, the *ādisiddhācārya* of the Caryācaryaviniścaya, while in the lists of the Varnanaratnākara and of the Haṭhayogapradīpikā no mention is to be found of Lui-pā though there is mention of Matsyendranātha. But better support to our view comes from the Kashmiri tradition where the name Macchinda,³ that is the prākṛit or apabhraṃśa form of scr. Matsyendra is clearly considered as an appellative of some siddhas who have reached a particular stage in the mystic realization. We read, in fact, in the Tantrāloka of Abhinavagupta, Vol. I, p. 25.

¹ The legend referred to here is the same as that of Jonah. It is at present impossible to state whether we have here the trace of some influence exercised by Semitic traditions on our school, or a quite independent form of the legend, which, as I remember to have read in DUSSAUD *Civilizations Préhelleniques*, seems to have been known also to the Creteans. Cp. PISCHEL *Der Ursprung des christ. Fischsymbol Sitzungsberichte d. Preuss. Akademie*, 1905. LAUFER *Die Brūta Sprache*, p. 11. 12 (reprint). There is agreement between Gorakṣavijaya and Grub t'ob, life of Minapāda; but the legend, here related in connection with Lui-pāda, Macchindra, Matsyendra, is different. Cp. the German translation of the *Grub t'ob* by Grünwedel in Baessler Archiv. Moreover it should be noted that while Minanātha is said to have been a fisherman from Kāmarūpa, (*Grub t'ob* and *Bka 'qbabs bdun ldan*, translated by Grünwedel in Bibliotheca Buddhica XVII). Lui-pā is said in the *Grub t'ob* to have been a prince; on Luhi cadra, Lohicandra or Lohidāsa cfr. VASU, *Modern Buddhism in Orissa*, p. 123, n. 2. Lui, Luiji is, perhaps, as already suggested by GRÜNWEDEL, an *apabhraṃśa* form for *Rohita*; *rohita* as a fish of good omen is well known in Buddhist Literature; cp. *Avadānaśataka* I, 168 ff. *Jātaka* IV, p. 2, etc.

² *Bka 'qbabs bdun ldan*, p. 121.

³ So also Macchindra in the *Maṅgalāṣṭaka* attributed to Kālidāsa on which cp. Gokhale. *The Maṅgalāṣṭaka* of K., I.H.Q., I. p. 739.

*rāgārunam granthibilāvakīrṇam
yo jālam ātānavitānavṛtti |
kalombhitam bāhyapathe cakāra
stān me sa macchandavibhuk prasannaḥ ||*

Here the commentator Rājānaka Jayadratha first quotes the following verse:—

*macchāḥ pāsāḥ samākhyaṭās capalās cittavṛttayas |
cheditās tu yadā tena macchandas tena kīrtitaḥ ||*

And then comments: “*pāsakhaṇḍanasvabhāvo macchanda eva.*” It is, therefore, evident that at the time of Abhinavagupta the name *matsyendra*, *apabhramśa*: *macchinda*, *macchanda* was a mere appellative for some Siddhas; the possibility that it was a personal name seems to be excluded by the artificial legend invented to explain its origin and by the evident symbolic meaning of the word *matsya*, *maccha* interpreted by the Kashmiri school as *pāśa* or *indriya*. As regards this last point the śaiva tradition quite agrees with the buddhist according to which *mīna* has also a technical and mystical meaning; we read in fact in the commentary upon the Catuspīthatantra called Amitapadā by Durjayacandra (third patala): *prajñāmakaramīnakair iti sarvabhāvānām niḥsvabhāvatāprajñā tayā ca sarvendriyāni prāṇina iva makaramīnakair vyāpādyante iti sādharmyat prajñāiva makaramīnayate*. It is also not out of place to note that in the *Mahākāulanirṇaya* we find the form *Macchayaghnepāda* (*Nepal Catal.* II, p. 32, 33), which rests upon the meaning of the name as explained by the Kashmiri tradition. The hypothesis is, therefore, possible that the title *matsyendra* or its synonym was first given to Lui-pā, as it is stated by the Tibetan tradition, and subsequently taken by some of his followers assuming the definite character of a title or appellative. This evolution was already accomplished at the time of Abhinavagupta (X-XI sec.) This fact is not without a bearing upon the chronology of the siddhas as it shows that the first man to whom this appellative was given must have been much older than Abhinavagupta. If the Tibetan tradition is right in identifying Lui-pā with Matsyendra we could have a *terminus a quo* as regards the age of this siddha: in fact, I find reference to *Lui-pā* in the *Abhisamayamañjarī* of Śāntirakṣita, fol. 3, 1 *tataḥ kava...*(?) *dvayaṃ kṛtvā jñānacakravābhāvanam iti Luyi- pādokteḥ*.

IV

THE GORAKṢASAMHITĀ AND THE AVADHŪTAGITĀ

Gorakṣasamhitā is one of the works attributed to Gorakṣa; it is known to me only through the edition in Bengali characters by Prasannakumāra Kaviratna (śaka samv. 1897).

It is composed of five *aṃśas*, the first four of which are nothing but a manual of haṭhayoga in which all the various *mudrās*, *āsanas*, *dhāraṇās*, etc., are described; apart some few exceptions, it does not contain anything new or what we do not find in other manuals of this kind, such as the Haṭhayogapradīpikā, the Gheraṇḍasamhitā, the Śivasamhitā, the Kālitāntra, etc. But the fifth *aṃśa* is quite different in its contents; it is in fact a short philosophical treatise in the form of the *gītā*-literature, well written and extremely interesting for those who want to know the dogmatical and philosophical fundaments of these later mystical schools. It is evident that it has no connection with the rest of the work; while the other four parts are chiefly concerned with the *yoga* praxis, here we have an exposition of the absolute identity of the individual soul with the all; and this all is described, just like the dharmadhātu of later Buddhist schools, as *nirvikalpa*, *gaganopama*, *śūnya*. The supreme reality is *nirālambana*, but the *ālambanas*, which are mere *kalpanās*, may have a pure conventional value, in so far as the yogins must have recourse to them in their progressive realization of the truth, but without *abhiniveśa*, as they do not correspond to anything real¹. (cfr. the Yogācāra point of view as expounded for instance in the Abhisamayālaṅkāraloka). But, in fact, the truth or the absolute is *sahaja*, inborn.² In one word, we find here the ideas that are common to the Siddhas and to the Śaiva as well as to the Buddhist Tantras belonging to the same period.

Now it is doubtful whether this section belonged to the original redaction of the Gorakṣasamhitā or was added to it later. I have no access to other editions of the work or to manuscripts of it but this much I can say, viz., that the existence

¹ Cr. Gorakṣasamhitā 121.

*sūksmatvāt tadadṛśyūn, nirguṇatvāt 'ca yogibhiḥ
ālambanādi yat proktaṃ kramād ālambanaṃ bhavet*

The theory of the Abhisamaya is just based upon an extremely subtle classification of the progressive *ālambanas* which are the support of the meditation of the Bodhisattva aiming at the supreme illumination. One *ālambana* is purified and annulled by the assumption of a contrary—*pratipakṣa*—which has a mere conventional, momentary value, in so far as it is to be cleared off by a higher *ālambana* and so on up to the realization of the *śūnyatā*, which of course must be devoid of any *idea* of the *śūnyatā* or attachment to it because in this case there would be no *śuddhi*. All these topics have been fully discussed in the introduction to my edition of the Abhisamaya where the mystical theories of the tantras, Śaiva and Buddhist as well, have been studied together with the system of the *siddhas*.

² V. 90

*svabhāvasamvṛttir ahaṃ ca tattvam
ākāśakalpaṃ sahaṃ dhruvam ca*

*rāgārunam granthibilāvakīrṇam
yo jālam ātānavitānavṛtti |
kalombhitam bāhyapathe cakāra
stān me sa macchandavibhuk prasannaḥ ||*

Here the commentator Rājānaka Jayadratha first quotes the following verse:—

*macchāḥ pāsāḥ samākhyaṭās capalās cittavṛttayas |
cheditās tu yadā tena macchandas tena kīrtitaḥ ||*

And then comments: “*pāsakhaṇḍanasvabhāvo macchanda eva.*” It is, therefore, evident that at the time of Abhinavagupta the name *matsyendra*, *apabhramśa*: *macchinda*, *macchanda* was a mere appellative for some Siddhas; the possibility that it was a personal name seems to be excluded by the artificial legend invented to explain its origin and by the evident symbolic meaning of the word *matsya*, *maccha* interpreted by the Kashmiri school as *pāśa* or *indriya*. As regards this last point the śaiva tradition quite agrees with the buddhist according to which *mīna* has also a technical and mystical meaning; we read in fact in the commentary upon the Catuspīthatantra called Amitapadā by Durjayacandra (third patala): *prajñāmakaramīnakair iti sarvabhāvānām niḥsvabhāvatāprajñā tayā ca sarvendriyāni prāṇina iva makaramīnakair vyāpādyante iti sādharmyat prajñāiva makaramīnayate*. It is also not out of place to note that in the *Mahākaulanirṇaya* we find the form *Macchayaghnepāda* (*Nepal Catal.* II, p. 32, 33), which rests upon the meaning of the name as explained by the Kashmiri tradition. The hypothesis is, therefore, possible that the title *matsyendra* or its synonym was first given to Lui-pā, as it is stated by the Tibetan tradition, and subsequently taken by some of his followers assuming the definite character of a title or appellative. This evolution was already accomplished at the time of Abhinavagupta (X-XI sec.) This fact is not without a bearing upon the chronology of the siddhas as it shows that the first man to whom this appellative was given must have been much older than Abhinavagupta. If the Tibetan tradition is right in identifying Lui-pā with Matsyendra we could have a *terminus a quo* as regards the age of this siddha: in fact, I find reference to *Lui-pā* in the *Abhisamayamañjarī* of Śāntirakṣita, fol. 3, 1 *tataḥ kava...*(?) *dvayaṃ kṛtvā jñānacakravibhāvanam iti Lui-pādokeṭṭeḥ*.

IV

THE GORAKṢASAMHITĀ AND THE AVADHŪTAGITĀ

Gorakṣasamhitā is one of the works attributed to Gorakṣa; it is known to me only through the edition in Bengali characters by Prasannakumāra Kaviratna (śaka samv. 1897).

It is composed of five *aṃśas*, the first four of which are nothing but a manual of hathayoga in which all the various *mudrās*, *āsanas*, *dhāraṇās*, etc., are described; apart some few exceptions, it does not contain anything new or what we do not find in other manuals of this kind, such as the *Hathayogapradīpikā*, the *Gheraṇḍasamhitā*, the *Śivasamhitā*, the *Kālitāntra*, etc. But the fifth *aṃśa* is quite different in its contents; it is in fact a short philosophical treatise in the form of the *gītā*-literature, well written and extremely interesting for those who want to know the dogmatical and philosophical fundaments of these later mystical schools. It is evident that it has no connection with the rest of the work; while the other four parts are chiefly concerned with the *yoga* praxis, here we have an exposition of the absolute identity of the individual soul with the all; and this all is described, just like the *dharmadhātu* of later Buddhist schools, as *nirvikalpa*, *gaganopama*, *śūnya*. The supreme reality is *nirālambana*, but the *ālambanas*, which are mere *kalpanās*, may have a pure conventional value, in so far as the yogins must have recourse to them in their progressive realization of the truth, but without *abhiniveśa*, as they do not correspond to anything real¹. (cfr. the *Yogācāra* point of view as expounded for instance in the *Abhisamayālaṅkāraloka*). But, in fact, the truth or the absolute is *sahaja*, inborn.² In one word, we find here the ideas that are common to the *Siddhas* and to the *Śaiva* as well as to the Buddhist Tantras belonging to the same period.

Now it is doubtful whether this section belonged to the original redaction of the *Gorakṣasamhitā* or was added to it later. I have no access to other editions of the work or to manuscripts of it but this much I can say, viz., that the existence

¹ Cr. *Gorakṣasamhitā* 121.

*sūksmatvāt tadadṛśyān, nīrguṇatvāc 'ca yōgibhiḥ
ālambanādi yat proktaṃ kramād ālambanaṃ bhavet*

The theory of the *Abhisamaya* is just based upon an extremely subtle classification of the progressive *ālambanas* which are the support of the meditation of the *Bodhisattva* aiming at the supreme illumination. One *ālambana* is purified and annulled by the assumption of a contrary—*pratipakṣa*—which has a mere conventional, momentary value, in so far as it is to be cleared off by a higher *ālambana* and so on up to the realization of the *śūnyatā*, which of course must be devoid of any *idea* of the *śūnyatā* or attachment to it because in this case there would be no *buddhi*. All these topics have been fully discussed in the introduction to my edition of the *Abhisamaya* where the mystical theories of the tantras, *Śaiva* and Buddhist as well, have been studied together with the system of the *siddhas*.

² V. 90

*svabhāvasamvṛttir ahaṃ ca tattvam
ākāśakalpaṃ sahaṃ dhruvam ca*

of the fifth *aṃśa* as an independent work¹ is a well established fact. This fifth part is nothing but the *Avadhūtagītā*, which is quoted as a distinct work in Gorakṣasiddhāntasaṅgraha p. 33 and related to the Gorakṣa-school. But this attribution is not beyond contention: in fact in the printed text² we read the colophon: *iti śrīdattātreyakṛtāvadhūtagītā* and this attribution is general in the manuscript redaction, as I can guess from the bibliographical material at my disposal.³ I must add that in a copy of the same work preserved in the Durbar Library of Katmandu, it is styled "Dattātreyagorakṣasamvāda." This fact while confirming the hypothesis that Dattātreyā⁴ was an historical personage, seems to show some connection between his doctrines and those of Gorakṣa and should not therefore pass unnoticed by future investigators of the religious sects and currents of ancient India. I must add in this connection that according to a passage of the Tantramahārṇava quoted in Gorakṣasiddhāntasaṅgraha (p. 44) *Dattātreyā* is called Mahānātha and included among the eighty-four siddhas. This proves once more the complexity of this school called the Siddhas. Though admitting some general principles accepted by all and which, therefore, represented a link among the followers of the sect, still, this school, as it always happened in India, was divided very soon into a series of individual interpretators and therefore into groups and subgroups, which we are no longer in a position to discriminate. This fact is well pointed out by the different lists of the Siddhas⁵ handed down to us, which are Buddhist (Grub t'ob.; Bka' babs bdun ldan, Tārānātha, gSum pa mk'an po.) and Saiva (Varṇanarātṇākara, Hathayogapradīpikā). These Siddhas were not only claimed as their own masters by each of the two greatest currents of thought of medieval India, but in each current the various *sampradāyas* had their own list of Siddhas. This explains why so much discrepancy as regards their names is to be found among the lists that we have at our disposal and which can only be explained if we assume that they came to us from various sects representing particular tendencies.

V

A SANSKRIT WORK BY SIDDHA CARPAṬI

Carpaṭi is one of the eighty-four Siddhas. His biography is preserved in the Grub t'ob where his name is given in the

¹ But the 33 first verses of the fifth *aṃśa* of the *Samhitā* are not in the *gītā*.

² By the Nirṇayasāgara Press; but the same work is also included in the Brhatstotrasaritsāgara. There is another *Avadhūtagītā* in Bhāgavata-purāṇa xi, 7-9.

³ See AUFRECHT'S *Catalogue* s. v.

⁴ See BARNETT—*Hindu gods and Heroes* p. 114.

⁵ The number 84 induces suspicion; it is in fact one of the mys-

corrupt form Capari, in the bKa' babs bdun ldan in the History of Tārānātha p 106 and in gSum pa mk'an po i. 129. He is to be found also in the list of the Varṇanaratnākara and in that of the Hathayoga. While in Nepal I had the rare privilege of examining the rich collection of manuscripts gathered with great competence by His Honour the General Kesar Sham Sher Jung Bahadur. One of these manuscripts contains a small work by Carpati or rather a commentary—which is in fact a mere *bālābodhinī*—on a *stotra*, written by him. Since no other work from the pen of this Siddha is known to us it is perhaps interesting to give some information about it. The *stotra* is called "*Devamanuṣyastotra*" and it is a hymn to Avalokiteśvara, Lokeśvara. It seems to be in circulation even now among the Buddhist community of Nepal. That the small *stotra* is really by Carpati¹ is stated by the commentator at the very beginning of his *ṭippaṇī*

*karuṇāśūnyatābhinnamūrtim² advayam uttamam
tratāram sarvalokānām name lokeśvaragurum
śrīmanmeghamahāpātrapreraṇād vīhitā mayā
śrīśīlasāgareṇeyam carpatīstututippaṇī*

Mention of the same is to be found also in the commentary on verse 16 "*mayā Carpatinā*" and verse 22 "*mayi Carpatau.*" At the end of the *stotra* Lokeśvara is called *potalakācalavāsa*. As a whole the *stotra*, neither for its style nor for its contents, seems to be particularly interesting. The only thing which I like to quote here is the allusion to magical and alchemic practices which are quite characteristic of the literature connected with the Siddhas.

añjanety ādi; he bhagavan yasya tvaṁ tasyasi tasyāñjanagutikāpādukasiddhiḥ sidhyati, na kevalam añjanagutikāpādukasiddhir eva sidhyati, siddhausadhimanmantravidhir api sidhyati na kevalam.....sidhyati yakṣaṣṭrī cā tasya sidhyati, na kevaṁ etc., purapraveśo 'pi.

As we saw before (p. 132) he is included by the author of the Gorakṣasiddhāntasaṅgraha among the 24 Kāpālikas.

This Siddha is not unknown in Indian tradition because we find mention of him in the Vamsāvalī of the Chāmbā State edited by Doctor VOGEL. (*Antiquities of Chāmbā State* I, p. 81 ff.) According to this source he was held in high esteem by king Sāhila, who lived in the tenth century and with whom the real history of Chāmbā State begins. There is no reason, as Doctor Vogel also points out, for rejecting this state-

tical numbers in Buddhism as well as in the Tantras (12 zodiacal signs x seven planets?)

¹ On the meaning of the name cfr. GRÜNWEDEL, *Edelsteinstimme* p. 120 note.

² It is known that *bodhicitta* in later mahāyāna and in Buddhist Tantras is twofold: it is the union of *karuṇā* and *śūnyatā*.

ment, which is indirectly confirmed by the Grub t'ob, where the connection of Carpaṭi with a king of Campaḡa is referred to. The mention of the same Siddha in an inscription of Ladak is too doubtful to be used for chronological purposes. (FRANCKE *Antiquities of Indian Tibet* II, p. 274.)

If this synchronism is exact, and the data furnished by the *bKa' qbab. bdun ldan* are based upon some historical tradition, we can fix the date of Minanātha by that of Carpaṭi because Mina is said to have been the disciple of Carpaṭi.

VI

A SANSKRIT BIOGRAPHY OF THE SIDDHAS AND SOME QUESTIONS CONNECTED WITH NĀGĀRJUNA

With the exception of the lists contained in the Varṇanarat-nākara and in the Hathayogapradīpikā and some scattered allusions to particular Siddhas to be found in the Gorakṣasiddhānta-saṅgraha no connected account of these Siddhas is known to me to have been preserved in Sanskrit. Still if we are to judge from the Tibetan tradition some biographies there must have been. The Grub t'ob which has been translated by Grünwedel is the Tibetan rendering of a Sanskrit original the author of which was a pupil of Vajrāsana. Tārānātha, according to the statement of Sum pa mk'an po¹ drew his information from the works of Indradatta, Indrabhadra, and Bhataghadri, a statement which is supported by Tārānātha himself.² Unfortunately none of these works has come down to us. This is a matter of regret because if such treatises do not seem to have been very important from the philosophical or literary point of view, still, if we are to judge from the Tibetan translations they contained much useful historical and geographical information. But during my last visit to Nepal I was lucky enough to find a palm-leaf fragment of such a work. It belongs to the collection of His Honour the General Kesar Sham Sher Jung Bahadur Rānā who most graciously allowed me to take a copy of the same. For this and for having shown me the treasures contained in his rich collection of manuscripts I express my most sincere thanks to him.

The booklet is a mere fragment, the style of which is defective; perhaps it was a kind of *guruparamparā*, written without literary pretension by some disciple. But it shows a division into āmnāyas or mystical schools, just as we find in the *bKa' babs bdun ldan*, with which it shows to have many points of contact, as remarked by me in the notes. This is

¹ See dPag bsam ljon bzaṅg p. 131. *Geschichte* p. 281 Kṣemendra-bhadra of Tārānātha is, perhaps, the same as Indrabhadra.

² P. 123. When we compare *bKa' qbab bdun ldan*, life of Maitrī, with our fragment, we shall easily perceive that they are strictly related.

a new proof that the Buddhist tantras and the later development of mahāyāna Buddhism were divided into a great number of tendencies each one of which had its masters and its acknowledged texts. The classification of this material according to the various āmnāyas must be the first task of the scholars, when they begin to investigate this neglected branch of Indian mysticism, which I should like to call rather Indian gnosticism, inasmuch as one of its fundamental features is the attempt to harmonize Buddhist and Hindu religion into a kind of syncretism chiefly expounded by the Tantras.

The second point which deserves mention is that we find here some information about Nāgārjuna. We shall discuss later on whether this Nāgārjuna is the mādhyamika teacher or another. Practically, all the information is about his birth-place and his parents, because the author seems to consider him as chiefly a second Buddha, the founder of the mystical school. On the other hand, some other well-known Siddha, like Advayavajra with whom the fragment seems chiefly concerned, is considered as a manifestation of Nāgārjuna or rather of his *vajrakāya*. If, in fact, we read the fragment carefully, two things will appear: (a) that many *Siddhas* are held to be the incarnation of one and the same personage—in this case Nāgārjuna, (b) that every master took a different name as soon as he was initiated to a special school, so that one and the same man may in fact be known under various names. As regards the first point our text states that Nāgārjuna was born in Karahāṭaka according to a prophecy of Buddha, but, then, another of his incarnations *vyākṛtād aparam matam [nāma]* is referred to, viz., that as Dāmodara who, as said at page 152 was born in Kapilavastu and who, according to fragment VI is Advayavajra. Moreover, he appears as Ratnamati, and as Advayavajra, who, if we are to follow the marginal gloss, is also called in the text by the very name "Nāgārjuna." All these various names are dependent on the different *adhiṣṭhānas* or *vidhis* or *anugrahas*, and deserve our notice because it appears evident, that the school from which our text issued, believed in the theory of the periodical reincarnation of the same bodhisattva as it is the actual dogma of Tibet.

As to the second point we find, for instance, that Dāmodara, after having completed his studies of the *Sammattīya* (*Sammittīya*) *nikāya* receives the name Maitrigupta, while later on when he has the direct vision of Vajrayoginī [? p. 153 *sākṣād-darśanam bhavati* only, but p. 149 *vajrayoginī-dhishṭhita*] he becomes Advayavajra: *Advayavajro 'bhūt*. This fact is proved by his works preserved in the bsTan agyur in which we find his name in different forms: Avadhūtipā, Maitrigupta, Advayavajra. This implies that the various masters took different names, according to the various *abhi-*

sēkas received or the *sampradāyas* to which they were initiated. This system, which was introduced into and is up to this time practised in the monasteries of Tibet, complicates the real attribution of many mahāyāna works of later time to their real authors. Moreover, these names have a symbolical meaning or denote a particular stage of knowledge or of saintliness and therefore are likely to have been given to various individuals:¹ So we have at least two Vimuktisena's, two Āryadevas, etc. Such also are the names in which the word *sūra* appears "*ayam bodhicittasūro dānasūro śīlasūrah vīryasūrah dhyānasūrah prajñāsūrah. samādhisūrah*" (Śikṣāsamuccaya p. 16): "*Kalyāṇamitreṣu sūrasamjñā*" (ib. p. 36, etc.) or those composed with *nāga*; of Mahānāga is one of the adjectives used for those who are present to a *saṅgīti*. The word is so explained by Haribhadra (p. 11): *traividyaḍḍitvaviśiṣṭa dharmā-dhigamayogān mahāpradhānabhāvena, mahānāga.* or (p. 12) *kṛṣṇasāhgrāmaviṣayitvān mahānāga.*

The *Mahāprajñāpāramitāśāstra* by Nāgārjuna also comments (Taisho edition. Vol. XXV, p. 81): "*mahā* means: great, *na*=not; *ga*=sin. Or also: *nāga* means either dragon or elephant. These five thousand arhats have a far greater power than all other arhats and therefore are called dragons or elephants. The dragons have great power of going in water; the elephants have great power of marching on the hill).....".

These two points deserve mention. We know, in fact, that in the bsTan agyur there is a great number of Tantric treatises attributed to Nāgārjuna. More than that; the same *sampradāya* of Nāgārjuna, as known to us from Chinese sources, the most ancient now accessible to us, is met with in the Tibetan tradition concerning the Tantric Sects. I mean to say that we find the series: Nāgārjuna, Rāhulabhadra Āryadeva as the authors of many treatises absolutely tantric and describing rituals, *mudrās*, *kramas*, quite peculiar to the tantric sects, but which, though based generally upon the dogmatical teachings of the Mādhyamika school cannot be considered as old as the great Ācārya Nāgārjuna.

This implies that some masters of the *Siddha-sampradāya* considered themselves or were considered by their disciples as the manifestation (Tib. *rnam q'prul.*) of the first ācāryās as fully evidenced by our text and were given the same name. This fact explains quite well the contamination which we may trace between the biographical accounts of the older masters as given in the Chinese sources and those preserved in the Tibetan tradition. In this way we are also able to understand why

¹ That some names were peculiar to some schools only has been already noted by LAUFER, *Bruža Sprache* p. 9, n. 2.

the various Siddhas are known to our sources under different names, while the information about them is very often contradictory. Rāhula in the Grub t'ob is a *sūdra* from Kāmārūpa, but there also Rāhulabhadra is the name of Śaraha: on the other hand, in the bKa' babs bdun ldan, Rāhulabhadra is a brāhmaṇa of Odiviśa. Āryadeva is another name for Vairaginātha or Karnari or Kanheri which is explained as "kāṇa" and gave origin to a legend almost the same as that related in connection with the old Kānadeva-Āryadeva of the Chinese tradition. Moreover, we have one Nāgārjuna or Nāgabodhi (Grub t'ob 16), one Nāgabodhi who according to Tārānātha (p. 86) was the disciple of Nāgārjuna, and to the series we may add the Nāgāhvaya of the Laṅkāvatāra¹ and Mañjuśrīmūlakalpa and the Nāgārjunagarbha, author of a medical work.² That there were two Nāgārjunas has been clearly pointed out by Dr. Benoytosh Bhattachārya³ and this view is supported by the comparative study of the material at our disposal, the remarks made above and even by the brahminical tradition.⁴ The relation between the various masters seems also to lead to the same conclusions. The bKa' babs considers Rāhulabhadra as the master of Nāgārjuna, but this is contradicted by the statement of the Chinese sources which show Rāhulabhadra as the disciple of Nāgārjuna.⁵ In the same book, instead of Āryadeva, Śāvari is given as his disciple but this Śāvari is at the same time called at p. 20 Śaraha the junior and we saw that according to the Grub t'o'b Śaraha is the same as Rāhulabhadra. In the "history of Buddhism"

¹ On these passages cp. WALLESEY. *The life of Nāgārjuna* in "Hirth anniversary volume".

² CORDIER, *Catalogue*. III p. 462.

³ Introduction to the *Sādhana-mālā* p. XLV ff.

⁴ Goraksasiddhaṇṭasāṅgraha, which knows: Malayārjuna, p. 19, Nāgārjuna, Saḥasrārjuna p. 44.

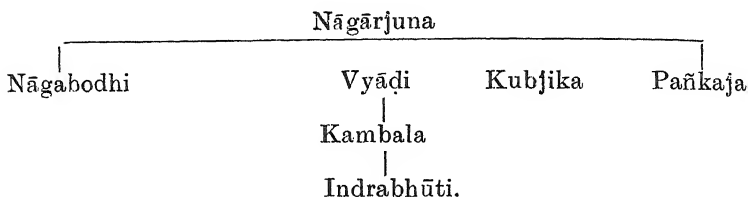
⁵ Ui, *Studies in Indian philosophy* (in Japanese) p. 341-354.

The old Rāhulabhādra is the author of the *Prajñāpāramitāstotra* which is published in the beginning of the *Aṣṭasāhasrikāprajñāpāramitā*: The authorship of this stotra is beyond contention (cf. *Journal and Proceedings R.A.S.B.*, 1910 p. 425).

As regards the antiquity of that small work no doubt is possible, inasmuch as it is incorporated in the Ta che tu lun, the *Mahāprajñāpāramitāśāstra*, the Commentary upon the *Śatasāhasrikāprajñāpāramitā* written by Nāgārjuna and translated into Chinese by Kumārajīva. This quotation proves that the literary activity of Rāhulabhadra began when his master was still alive. Further precision as regards his time is derived from the fact that verses from him, as pointed out by Ui, are to be found in Sthiramati's *Mahāyānāvataṛakāśāstra* and Asaṅga's works. I must add that he is quoted also by Vasubandhu in his *Pratītyasamutpādivibhaṅga* a fragment of which has been brought by me from Nepal and is being edited in *J.R.A.S.*

In the Chinese biographical accounts no mention is made of Nāgārjuna's guru. He learns the *Mahāyāna* from the Nāgas, but Rāhula or

we have also Rāhula as the first master, then Nāgārjuna, then Āryadeva, Nāgabodhi and Nāgāhvaya.¹ In the Grub t'ob the synchronism is still different. We have in fact the following succession ; (for which cp. also CORDIER, *Cat.*, III, p. 127).



Here we are on a better ground ; in fact, we know that Indrabhūti is connected with Padmasambhava whose time is relatively known (he went to Tibet towards the end of the first half of VIII century A.D.). On the other hand the relation with Vyāḍi the alchemist, stated here, shows that the Siddha Nāgārjuna, whose name and fame were also known to Albērūnī during his travels in India, is unmistakably referred to.² So that we can safely assume with Doctor Benoytosh Bhattācārya that the Alchemist or Siddha Nāgārjuna lived in the VII century A.D. But even then, we cannot state whether the Alchemist Nāgārjuna is the same as the author of many tantric works preserved under his name in the bsTan agyur. That the Siddhas were all connected with the *rasaśāstras* or alchemy,³ there is no doubt, but considering the long series of names beginning with Nāga which we find at this time and in the same school we

Āryadeva is given as his disciple. We have therefore these two different *parāmparās* ;

Ch.	{	(a)	Nāgārjuna,	Rāhula,	Āryadeva.
		(b)	„	„	Āryadeva, Rāhula,
Tib.			Rāhula —	Nāgarjuna	{
					Nāgabodhi,
					Nāgāhvaya,
					Āryadeva,
					Vyāḍi,
					Sabara.

¹ In our text also Śabara receives the initiation from the Siddha Nāgārjuna, and if we are to judge from what is written at p. 149 he is also called Saraha.

² But the statement of Albērūnī (who visited India about 1030 A.D.) that Nāgārjuna the alchemist, lived about one century before his time cannot be accepted; in fact allusion to Nāgārjuna can be traced as early as the VIII century. (JOLLY, *Festschrift Windisch.*) So the conclusion seems inevitable that Albērūnī's Nāgārjuna is the same as that of whom allusion is made in our Sanskrit fragment.

³ I refer to the biographies of the Grub t'ob as well as to the fact that many books of medicine or alchemy have the name Siddha appended to

cannot advance any definite theory until the works preserved in the *bsTanagjur* are comparatively studied and all the evidences preserved, chiefly in Tibet, investigated. Moreover the *guruparamparā* as given in our text points out the existence of another master called *Nāgārjuna*. In fact, though our fragment is far from being very clear, it seems almost certain that he follows this order

Nāgārjuna

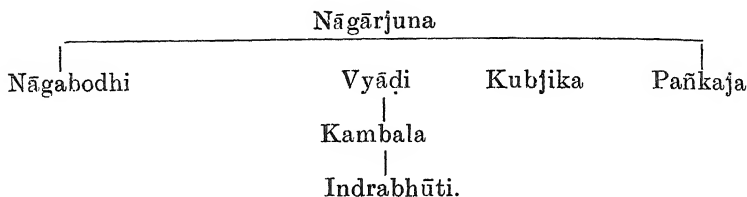
|
Śabara

|
Advayaśra (Dāmodara, Maitrīgupta)

The latter is connected with *Sāgara*, *Ratnākaraśānti* *Naropā*, etc. The dates of *Ratnākaraśānti*, *Naropā* (about whom there is a large literature in Tibetan) and *Advayaśra* are known. This synchronism leads to the conclusion that the *Nāgārjuna* here referred to must have flourished about the beginning of the X century A.D. This agrees, as we saw, with a statement contained in *Albērūnī's Travels*. So we have three different sets of texts which seem to have preserved information about three different masters equally known as *Nāgārjuna*: (a) Chinese documents referring to the *Mādhyamika* teacher, (b) *Grub t'ob* probably referring to the *Siddha Nāgārjuna*, (c) our text concerned with another tantric *Nāgārjuna*. One could suppose that these two sources are connected with one and the same teacher; but this doubt seems hardly possible because the synchronism with other masters given in both texts, unmistakably shows that we are concerned with two different periods. We may therefore conclude that there were various, more than two Buddhist teachers called *Nāgārjuna* or with some similar name, who lived at a different time, though we are not yet in a condition to state what are the works preserved in Tibetan which may be ascribed to one or to the other of these writers known as *Nāgārjuna*, *Nāgabodhi*, *Nāgāhvaya*, *Nāgārjunagarbha*, because the accounts and the tradition concerning them are confused. Anyhow the fact seems certain that the tantric works as a whole have no connection whatsoever with the founder of the *Mādhyamika* doctrine. This will appear evident when the various treatises attributed to him will be investigated. But from the study of the commentary upon the *Guhyasamājatantra*—to speak of one of the most prominent works circulating under his name—it appears evident that this is a later work. It insists upon the tantric system of the *Yoginīs*, perhaps introduced from

their title—Cf. *Siddhiyoga*, *Siddhasāranighaṇṭu* of *Viṣṇugupta*, *Siddhasārasaṃhitā* of *Ravigupta* (*Nepalese Catalogue* by *Haraprasāda Shāstrī* X. ff.).

we have also Rāhula as the first master, then Nāgārjuna, then Āryadeva, Nāgabodhi and Nāgāhvaya.¹ In the Grub t'ob the synchronism is still different. We have in fact the following succession ; (for which cp. also CORDIER, *Cat.*, III, p. 127).



Here we are on a better ground ; in fact, we know that Indrabhūti is connected with Padmasambhava whose time is relatively known (he went to Tibet towards the end of the first half of VIII century A.D.). On the other hand the relation with Vyāḍi the alchemist, stated here, shows that the Siddha Nāgārjuna, whose name and fame were also known to Albērūnī during his travels in India, is unmistakably referred to.² So that we can safely assume with Doctor Benoytosh Bhattācārya that the Alchemist or Siddha Nāgārjuna lived in the VII century A.D. But even then, we cannot state whether the Alchemist Nāgārjuna is the same as the author of many tantric works preserved under his name in the *bsTan agyur*. That the Siddhas were all connected with the *rasaśāstras* or alchemy,³ there is no doubt, but considering the long series of names beginning with Nāga which we find at this time and in the same school we

Āryadeva is given as his disciple. We have therefore these two different *parāmparās* ;

Ch.	{	(a) Nāgārjuna, Rāhula, Āryadeva.
	(b)	,, ,, Āryadeva, Rāhula,
Tib. Rāhula — Nāgarjuna	{	Nāgabodhi, Nāgāhvaya, Āryadeva, Vyāḍi, Śabara.

¹ In our text also Śabara receives the initiation from the Siddha Nāgārjuna, and if we are to judge from what is written at p. 149 he is also called Śabara.

² But the statement of Albērūnī (who visited India about 1030 A.D.) that Nāgārjuna the alchemist, lived about one century before his time cannot be accepted ; in fact allusion to Nāgārjuna can be traced as early as the VIII century. (JOLLY, *Festschrift Windisch*.) So the conclusion seems inevitable that Albērūnī's Nāgārjuna is the same as that of whom allusion is made in our Sanskrit fragment.

³ I refer to the biographies of the Grub t'ob as well as to the fact that many books of medicine or alchemy have the name Siddha appended to

cannot advance any definite theory until the works preserved in the *bsTanagjur* are comparatively studied and all the evidences preserved, chiefly in Tibet, investigated. Moreover the *guruparamparā* as given in our text points out the existence of another master called *Nāgārjuna*. In fact, though our fragment is far from being very clear, it seems almost certain that he follows this order

Nāgārjuna

|
Śābara

|
Advayaṣvaya (Dāmodara, Maitrīgupta)

The latter is connected with *Sāgara*, *Ratnākaraśānti*, *Naropā*, etc. The dates of *Ratnākaraśānti*, *Naropā* (about whom there is a large literature in Tibetan) and *Advayaṣvaya* are known. This synchronism leads to the conclusion that the *Nāgārjuna* here referred to must have flourished about the beginning of the X century A.D. This agrees, as we saw, with a statement contained in *Albērūni's Travels*. So we have three different sets of texts which seem to have preserved information about three different masters equally known as *Nāgārjuna*: (a) Chinese documents referring to the *Mādhyamika* teacher, (b) *Grub t'ob* probably referring to the *Siddha Nāgārjuna*, (c) our text concerned with another tantric *Nāgārjuna*. One could suppose that these two sources are connected with one and the same teacher; but this doubt seems hardly possible because the synchronism with other masters given in both texts, unmistakably shows that we are concerned with two different periods. We may therefore conclude that there were various, more than two Buddhist teachers called *Nāgārjuna* or with some similar name, who lived at a different time, though we are not yet in a condition to state what are the works preserved in Tibetan which may be ascribed to one or to the other of these writers known as *Nāgārjuna*, *Nāgabodhi*, *Nāgāhvaya*, *Nāgārjunagarbha*, because the accounts and the tradition concerning them are confused. Anyhow the fact seems certain that the tantric works as a whole have no connection whatsoever with the founder of the *Mādhyamika* doctrine. This will appear evident when the various treatises attributed to him will be investigated. But from the study of the commentary upon the *Guhyasamājatantra*—to speak of one of the most prominent works circulating under his name—it appears evident that this is a later work. It insists upon the tantric system of the *Yoginīs*, perhaps introduced from

their title—Cf. *Siddhiyoga*, *Siddhasāranighaṇṭu* of *Viṣṇugupta*, *Siddhasārasaṃhitā* of *Ravigupta* (*Nepalese Catalogue* by *Haraprasāda Shāstri* X. ff.).

Uddiyāna, and it begins with an elaborate discussion upon the *abhidhāna abhidheya* and *prayojana* of the Guhyasamāja, that is with topics that we never meet in the commentary—literature before the time of Dharmakīrti. Moreover the general dogmatical theories underlying the work are chiefly Yogācāra more than Mādhyamika and Ārya Maitreya is quoted there, which fact is sufficient to dispel any doubt as regards the necessity of considering the author of this commentary as quite different from the Mādhyamika teacher because it is known that Maitreya commented upon the Bhavasāṅkrānti (bsTan agyur, mdo, XVII, CORDIER. *Catalogue* III, 295) written by Nāgārjuna while the first kārikās of the Mādhyamikakārikās were commented upon by Asaṅga, the disciple and younger contemporary of Maitreya.

What I have said explains also the difference which we find in our sources as regards the birth-place of Nāgārjuna. Kumārajīva in his life of Nāgārjuna¹ just as the book of the tradition of the law translated by Ki Kia ye², states, that he was born in South India, without specifying the place; according to Yuan Chwang he was of South Kosalā.³ The bKa' babs bdun ldan says that Vidarbha in the south was his birth-place. These sources refer perhaps to one and the same Nāgārjuna, viz., the Mādhyamika teacher. The Grub t'ob, on the other hand, tells us that the birth-place of Nāgārjuna was Kahora.⁴ This second group refers undoubtedly to the Siddha Nāgārjuna, who is also nearer in time to the compilers of the works in which he is mentioned. Our text speaks of Karahātaka. In this connection, I must refer to another source also; I mean the Mahāmeghasūtra which was translated into Chinese for the first time by *Dharmakṣema

between 414 and 421 A.D. under the title 大方等
大雲無想經 Mahāvaiṣṭvāmahāmegha-asamjñā-
sūtra, which was sometimes considered in China as a forgery made in China on account of a prophecy which was said to refer to the Empress Wu Tse-t'ien of the T'ang dynasty (684-704). But as a matter of fact, as M. Démieville has demonstrated⁵ there is no ground for such a doubt. I myself have compared the Chinese with the Tibetan translation included in the bKa'. agyur (mdo VIII, 2) and found that there is a general agreement between the two translations, though of course there is no doubt that they were based upon two

¹ For its contents cfr. WALLESER. *art. cit.* and WATERS, *Travels*, II, 20 ff.

² *Ibid.*

³ Cfr. WATERS, *Travels* II. p. 204.

⁴ Modern Karad in the district of Satara; cp. for references S. LEVI *Le Catalogue des yakṣas dans la Mahāmāyūrī*, J. A. 1915, p. 93 ff.

⁵ *Les versions chinoises du Milindapañha*. BEFEO, 1924, p. 218 ff.

different redactions of the same work. In the 37 skandha there is a prophecy in which the Buddha says that after his nirvāṇa the time will come when a bhikṣu is to preach again the doctrine and protect the declining law. This passage has been fully translated by M. Démieville. It says that 1200 years after the nirvāṇa the great bhikṣu will appear in South India, at the

time of a king called Sātavāhana 娑多婆呵那

So to p'o ho na. He will be born in the kingdom of Siu lai ch'a Surāṣṭra, in a village called flower-garland, (for which M. Démieville proposes *Kusumamālā* or *Sumanamālā*) near the river 善方便 "good means" (Démieville proposes:

Sūpāya). This bhikṣu, "this great Nāgarāja" will sacrifice his life in order to protect the law. No direct mention of Nāgārjuna is made here; but the allusion to king Sātavāhana and to the sacrifice of his life of which there is mention in all the biographies of the mādhyamika teacher leave very little doubt that the prophecy contained here refers to Nāgārjuna.

Of course the statement concerning his time, viz., that he lived 1200 years after the nirvāṇa of Buddha is rather puzzling, because in no text such a later date is ascribed to him as can be seen from the following table.

Mahāmāyāsūtra ¹ 760 years.	Preface of Sen-jui to the Tattva- siddhīśāstra ² 530.	Account on the ³ transmission of the law. No date, but fol- lowing order: Asvaghōṣa, Kapi- māla, Nāgārjuna, Kānadeva, Rāhula.
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But if we turn to the Tibetan translation of the same work we find that the prophecy is equally contained there, though the names and the date do not agree with the Chinese text. This will appear evident from the comparison with the essential points of the passage in question as it appears in its Tibetan rendering.

(fol. 287, 6) ལྷའི་བྱ་དག་ང་འདས་པའི་འོག་ལོ་བརྒྱ་ལྔ་མང་པོ་

འདས་པ་ན་རྗེ་ཐུགས་ཀྱི་རྒྱུད་དུ་མཁར་གྱི་རྒྱལ་པོ་བརྒྱད་པ་གསོ་བ་ཞེས་

¹ Taishō Edit., Vol. XII, p. 1013.

² The passage is quoted also by Ki-tsang in his commentary upon the Sātaśāstra, Vol. XLII, p. 233.

³ Taishō ed., Vol. L, p. 316 ff.

བྱ་བ་འབྱུང་བར་འབྱུང་རོ། རེད་ཚེ་ལོ་བརྒྱད་ཅུ་ན་དམ་པའི་ཚེས་ལྷན་
 པར་འབྱུང་བའི་ལྷག་མ་ཙམ་དུ་ལྷན་པའི་དུས་ལ་བབ་པ་རེད་ཚེ་ངའི་ཉན་
 ཐོས་འབྱུང་བར་འབྱུང་དེ། དམ་པའི་ཚེས་ཀྱང་འབྱེན་པར་འབྱུང་། ཚེས་
 ཀྱི་འཁོར་ལོ་འང་བསྐོར་བར་འབྱུང་། ཐོག་པ་ཆེན་པོ་འང་གཞན་དག་ལ་
 ལྷན་པར་འཆད་པར་འབྱུང་རོ།

མཐོང་ན་དགའ་བ་དྲི་ཟེད་རྒྱལ་པོ་ང་འདས་པའི་ལོ་བུ་ལྷོ་ཕྱགས་
 ཀྱི་རྒྱུད་དུ་རྒྱང་སྤོང་བྱི་པོ་ཞེས་བྱ་བའི་ཡུལ་འཁོར་དུ་བསོད་ནམས་དང་
 ལྷན་གྱི་གོང་བྱི་མ་ཆེན་པོ་ཞེས་བྱ་བ་འབྱུང་སྟེ། གོང་རེད་འབབ་ཆུ་
 མཛེས་འབྱུང་ཅས་བྱ་བ་རེད་བྱང་ཕྱགས་ཀྱི་འགྲམ་དུ་འབྱུང་བར་འབྱུང་
 རོ། དེར་རྒྱུ་རིགས་ཆེན་པོ་ནམ་པར་དག་པ་འབྲ་གོ་(?)ཅན་ཞེས་བྱ་བའི་
 ཕྱགས་སུ་འབྱུང་བར་འབྱུང་དེ། རང་གི་སློབ་དང་བསྐོས་ནས་དམ་པའི་
 ཚེས་སྟོན་ནོ།

First of all instead of one thousand and two hundred years after the nirvāṇa of Buddha, the text followed by the Tibetan translators makes him live "many hundred years after the nirvāṇa," without further specification. As to the name of the king under whom this *bhikṣu* was to be born our Tibetan text gives the form; *brgyud pa gso ba*, viz., *vamśa* (or *tantra*) + *puṣṭi* or: *puṣṭa-vamśa*. We have here a form which we cannot at any rate consider as being equivalent to *Satavāhana* for which we have: *dge byed* or *bde spyod*. Nor is there any agreement as regards the country where this *bhikṣu* is supposed to be born; while the Chinese reads *Surāṣṭra*, in Tibetan we have the name: *dran̄sron̄byibo*. Here the first element of the compound corresponds to "r̄si". As regards *byibo* this word is unknown to Chandra Das, but Desgodins Dictionary registers *byibo* as = *byis pa*. = boy up to 16 years, *bāla*, *kiś-ora* which would give a form like: *r̄ṣibāla*.

The name of the village sounds also completely different in Tibetan: *byemač'expo* corresponds to *mahāsikata*, *mahāvāluka*.

Only the name of the river seems to agree in both redactions, *mḍses qbyor* corresponds to *suprayoga*: and this also can be the original of the Chinese 善方便 because 方便 is not only = *upāya*, but also (and chiefly in logical treatises) "*prayoga*".

So we have no grounds for affirming that the Mahāmegha-sūtra, in the redaction known to the Tibetan translators, contains a prophecy of Nāgārjuna, the mādhyamika teacher; and this quite agrees with the fact that Sum pa mk'an po quotes only two *vyākaraṇas* concerning the great ācārya, as contained in the sūtra-literature. I mean the Laṅkāvatāra and the Āryamañjuśrīmūlakalpa. The prophecy of the Laṅkāvatāra, as shown by Prof. Walleser, is to be found in the *Sagāthaka*-chapter, which cannot be considered as belonging to the older redaction of the text, since it does not appear in the translation by Gunabhadra (A.D. 443) but only in those of Bodhiruci (A.D. 513), and Śikṣānanda (A.D. 700-704). No definite conclusion can therefore be drawn even from this passage, not only on account of its later date, but also because we do not find there the name Nāgārjuna but the form Nāgāhvaya. Though this name is translated into Chinese as Lung-shu, used generally to render Scr. Nāgārjuna¹, we cannot at all state that the compiler of this portion meant the same doctor whom we usually know as Nāgārjuna; not only the Tibetan tradition, as we saw, distinguishes Nāgāhvaya from Nāgārjuna, but the Sanscrit text itself considers Nāgāhvaya as a proper name, not as a designation, *nāgāhvayaḥ sa namnā*.

To sum up, the biography published here does not throw any light upon the life of Nāgārjuna: it is not even concerned with him, but chiefly with Advayaśaśra supposed to be one of his manifestations. But it shows at the same time how confused is the tradition concerning the great ācārya, and how dangerous it would be to infer from the mere homonymie the identity of the very many personages called Nāgārjuna or having some similar name. The facts here collected and the remarks made above are at any rate sufficient to prove that we must distinguish the philosopher Nāgārjuna from the tantric; and this does not preclude the fact that between them a third doctor Nāgāhvaya or Nāgābodhi or Nāgābuddhi existed, about whom we cannot say anything precise, because he was identified by later traditions either with his predecessor or with his successor.

This distinction is so much more necessary when we remember that the date of Nāgārjuna has been taken as a

¹ So also in the quotation of the passage in the commentary of Ki-tsang on 中論 Chung Lun, Taishō ed., Vol. XLII, p. 1.

point of repair for fixing the date of other works or other writers.¹

(I)

नमो मञ्जुवचाय ॥

मञ्जुवच्चं प्रणम्यादौ नाथपादमनन्तरम् ।

अमनसिकाराम्नायं वक्ष्यते सुमहोदयम् ॥ १ ॥

संबुद्धा बोधिसत्त्वाश्च सिद्धास्तैरनुशासिताः ।

अभिषिक्तान्त्येष्टेषामाम्नायक्रम इष्यते ॥ २ ॥

तत्रादौ धर्मचक्रेऽस्मिन् श्रावकैः^२ परिवारितः ।

उपतस्थे स भगवान्दिशन्पारमितादिकम् ॥ ३ ॥

ततस्तान्स परित्यज्य गतवान्दक्षिणापथे ।

निर्माय धर्मधात्वाख्यं मण्डलं सुमनोरमम् ॥ ४ ॥

नायकः स्वयमेवात्र बोधिसत्त्वाश्च षोडश ।

नायकाश्चाभवन्नष्टौ तथाष्टावुपनायकाः ॥ ५ ॥

नामतस्ते निगद्यन्ते क्रमतो मण्डलस्थिताः ।

मण्डलं तु गुरुद्विष्टं [तत्तदा]^३ न्नायसङ्गतम् ॥ ६ ॥

मैत्रयः क्षितिगर्भश्च वचपाणिः खगर्भकः ।

लोकेश्वरश्च मञ्जुश्री सर्वानवरणस्तथा ॥ ७ ॥

¹ So, for instance, when Dallana (*Suśruta*, ed. by Jivānanda, p. 2) tells us that Nāgārjuna revised Suśruta we cannot jump to the conclusion that here the Nāgārjuna contemporary of Kaniska is alluded to. Against this view, accepted by Jolly, we must oppose that the Tibetan and even the Indian tradition seem to connect the medicine-treatises and the reform perhaps of Indian medicine to the Siddha Nāgārjuna. I cannot have here in India access to the sources speaking of the "Nāgārjuna Bodhisattva's prescriptions" alluded to by WATERS, op. cit., II, p. 206; it would be interesting to see if this work has any connection with the Nāgārjunīya-Kaksaputa or Siddha-Nāgārjuna Kaksaputa of which I know only a very bad edition in Bengali characters edited in the monthly Magazine Aruṇodaya. This work, as edited, has no relation with the Tibetan translation of a Kaksaputa equally ascribed to Nāgārjuna.

² MSS. kaipari.

³ MSS. gra(?)tadāmanāmnā,

समन्तभद्रचन्द्राभसूर्याभामलकौर्तिना ।

विमलप्रभस्तथा धर्मोद्भूतरत्नमतिस्तथा¹ ॥ ८ ॥

व्योमगङ्गाश्च सुधनो² मण्डलस्था यथाक्रमम् ।

अभिषेकं ततस्तेषां दत्त्वा पारमितादिकम् ॥ ९ ॥

समर्प्य शाक्यसिंहेन व्याकृतः शासनेऽमुना ।

आर्यनागार्जुन इति भविष्यति महामतिः ॥ १० ॥

प्रवर्तव्यमनेनापि धर्मचक्रप्रवर्तनम् ।

दक्षिणापथदेशेऽस्मिन् पत्तने करहाटके³ ॥ ११ ॥

ब्राह्मणस्य कुले जन्म पिता चास्य त्रिविक्रमः ।

माता सावित्री⁴ नामास्य व्याकृतादपरं मतम् ॥ १२ ॥

दामोदरेति विख्यातो भिक्षुत्वे शाक्यमित्रकम् ।

नामापरं रत्नमतिरनुग्रहविधौ स्थितः ॥ १३ ॥

आह्वा अद्वयवच्चेति वचयोगिन्यधिष्ठितः ।

सरहः सिद्धिभक्तेन तदनुग्राहको भवेत् ॥ १४ ॥

अस्य चानुग्रहात्पूर्वं तेन कारि च नाम तत् ।

ततः श्रुतं हयग्रीवं पश्चाज्जगाम⁵ दर्शनम् ॥ १५ ॥

रत्नमतिना च समं वरेभ्यः प्रस्थितः पुनः ।

लेखयित्वा प्रतिहृन्दं बोधिसत्त्वस्य⁶ धौमतः ॥ १६ ॥

पूजां प्रतिदिनं तस्य कृत्वा नागार्जुनो⁷ ऽवसत् ।

ग्रामे देहपूराख्ये तु एकान्तः सुसमाहितः ॥ १७ ॥

¹ Sic. MSS. But verse defective.

² Sic.

³ See note 4, page 144.

⁴ Ex. cf. MSS. Sāvitta; cfr. page 28.

⁵ Suppl. ex. cf.

⁶ Perhaps Nāgārjuna is meant here; but according to the gloss Advayavajra is the man who designs the image (*pratichchanda*) of him, for his daily *pūjā*. This seems impossible inasmuch as the *naṭaputra* is to become Śābara the *guru* of Advayavajra, as shown in VI. It is also contradicted by the Tibetan authority referred to in note 1, p. 150.

⁷ अद्वयवच्च marginal gloss.

⁸ The reading of the MSS. seems sure; but I am unable to locate this place in Varendra.

लोको नाम नरस्तस्य गौरी च सहचारिणी¹ ।

तयोः पुत्रः त्रिशरण आर्यम²ध्येषते परम् ॥ १८ ॥

रत्नमतिन्दर्शयति स तमाह³ न पश्यसि ।

ज्ञानक्षणेn[fol. २-a.]विकलः कथं तं पश्यसि क्षणात् ॥ १९ ॥

तत्प्रत्याह त्रिशरणस्तं ⁴मेऽनुग्रहं कुरु ।

यथा पश्यसि तं नाथं ज्ञानचक्षुरतीन्द्रियः ॥ २० ॥

आर्यनागार्जुनानुज्ञां प्राप्य सिद्धस्तदाभवत् ।

बोधिसत्त्वेन⁵ च ततो ऽनुग्रहीतो यथार्थतः ॥ २१ ॥

मनोभङ्गचित्तविश्रामो⁶ चर्यास्थानं विवेचितम् ।

आकृतिं शबरस्यासौ दधन्निवसति स्म सः ॥ २२ ॥

इति बुद्धबोधिसत्त्वसिद्धानामाम्नायः समाप्तः ॥⁷

(II)

इन्द्रभूतिपा । ओड्डिनौ⁸ । वच्चयोगिनी । तिलोपा । नारोपा ।

अदयवच्चपा । ध्यायीपा । महापण्डितामोचश्री । अथवा शबरनाथ ।

अदयवच्च । वच्चपाणि । पैण्डपातिक । पण्डितोऽभयाकरगुप्त । पुनर-

दयवच्चस्येति ॥

¹ In this account Trisāraṇa who is to become Sābara, and Sābareśvara—is said to be a son of a *Naṭa* called Loka and his wife *Gaurī*. But in the account of Sumpa mk'an po CXXXI,—who equally makes him a disciple of Nāgārjuna during the latter's residence in Bengal.—Lokī and Guṇī are said to be his wives.

² नागार्जुनम् marginal gloss.

³ नटपुत्रम्.

⁴ तम् is नागार्जुनं according to the marginal gloss.

⁵ नागार्जुन marginal gloss.

⁶ On these two mountains see p. 153. For this story cfr. also bKa, bab bdun ldan, p. 23-24. The verse here also is defective.

⁷ Here ends the first āmnāya. The *guruparamparā* which follows must belong to it, if we are to judge from next Chapter's List.

⁸ Probably Lakṣmīkarā.

(III)

वः¹कख्या उपायचक्रम् । जः शून्यता । तयोरेकं रेफः ।

“वाङ्मयार्थातीतवाकारो राकाराकारवर्जितः” ।

हेतुनुपलब्धिर्हौकारो वाराहौ वच्चपूर्विकेति परमार्थविमुक्तिः ॥

कायवाक्चित्तविसृष्ट्या त्रिकोणम् । हेतुफलयोरभेदत्वात्त्रिकोणं
तुल्यता धर्मोदयेति ॥ [२-२]

(IV)

नमः श्रीवच्चयोगिन्यै ॥

प्रथमं वाङ्मयपूजा सिन्दूरेण । असम्भवे मन्त्रेण । खट्वदि सूर्यस्थ-
ह्रंकाररश्मिभिराकृष्य प्रवेश्य पुष्पादिभिः संपूज्य तदनन्तरं जगच्छून्यौघाद्य ।
शून्यतानन्तरं फटिति । आत्मानं भगवती² भावयेत्, पर्वत³शिरोपरि
नानापुष्पोपेताम् । सूर्यस्थह्रंकाररश्मिं संस्कार्य आसवातो यथाऽदर्श-
वद्योगः(?) । अमृतमाखादनं वशीकरणे पर्वतादिकं पारद⁴सदृशं भावयन्
वामनात्तापुटेन पिबेत् । त्रिव्कालं बलिभावना कर्तव्या । यथादित्यो
बालतरुणाद्यनपेक्षं स्फुरितैः पर्वतमाक्रामति, तथा भगवतीपर्वताक्रान्तं
⁵भावयेत् । अमृतमाखादयेत् । शिष्यानुग्रहे जिह्वायां मन्त्रमभिलिख्य,
खट्वद्रश्मिनादं प्रवेश्य आवेशयेत् ।

(V)

वच्चयोगिनीगुरुरपरंपरा ॥ शुक्लनाथ । सागरदत्त । विजयघोष ।
अनङ्गवच्च । विसो । पैण्डपातिक । पण्डितविनयगुप्त । महापण्डित-
वागीश्वर । अवधूतसुधनश्री ॥ लौलावच्च । ललितवच्च । कोविदार-
पण्डितपादाः ॥ नमः सर्वज्ञाय ॥

¹ Here the mystical meaning of the word Vajravārāhi is given; but the *āmānya* which follows is in fact connected with Vajrayoginī.

² Viz., Vajrayoginī; identity of *sādhaka* and *sādhya* is essential in Tantric Buddhism and it is based upon the theory of *sarvasattasamata* fully developed by the Mahāyāna dogmatics and chiefly by the Bud-dhagotra-School.

³ *Meru*: is=*merudaṇḍa*, *sūrya*=*piṅgalā soma*=*īdā*; in this passage the *antaryāga*, *ādhyatmikapūjā* is described.

⁴ ex. cf. MSS. पादः.

⁵ It is necessary to understand: *ātmānam* or to correct: *tām parvatā-krāntām*.

(VI)

नमः श्रीश्वरेश्वराय ॥ इह खलु मध्यदेशपद्मकपिलवस्तुमहानगर-
समीपे भाटकरणी नाम पत्तिकाऽस्ति। तस्मिन् स्थाने ब्राह्मणजातिर्नान्का
नाम ब्राह्मणी च सावित्री¹ नाम प्रतिवसति स्म। तदा च कलान्तरेण
दामोदरो नाम² तत्पुत्रो बभूव। स चैकादशवर्षदेशीयः कुमारः सामार्ध-
वेदको गृहान्निक्रम्य मर्तबोधो नामैकदण्डोऽभूत्। ततः पञ्चाक्षी-
कटौसन्ते³ पाणिनित्याकरणं श्रुत्वा सप्तवर्षपर्यन्तेन सर्वशास्त्रमधिगम्य
विंशतिवर्षपर्यन्तं नारोपादसमीपे प्रमाणमाध्यमिकपारमितानयादिशास्त्रं
श्रुतम्। तदनु मन्त्रनयशास्त्रज्ञेन रागवच्चेण सहाऽवस्थितः पञ्च-
वर्षपर्यन्तम्। पश्चात्सहापण्डितरत्नाकरशान्तिगुरुभट्टारकपादानां पा⁴श्चै
निरकारव्यवस्थां श्रुत्वा वर्षमेकं यावत्। पश्चाद्विक्रमशीलं गत्वा महा-
पण्डितज्ञानश्रीमित्रपादानां पार्श्वे तत्प्रकरणं⁵ श्रुतं वर्षद्वयं यावत् ततो
विक्रमपुरं गत्वा संमतौयनिकाये मैत्रिगुप्तनाम⁶ भिक्षुर्वभूव। सूत्राभि-
धर्मविनयचक्रं श्रुत्वा वर्षचतुष्टयं यावत्पञ्चक्रम⁷ ताराम्नायेन मन्त्रजापं कृत्वा
कोटिमेकं चतुर्मुद्रार्थसहितेन भट्टारकखण्डे गदितम्। “गच्छ त्वं खस-
पणम्”।⁸ तत्र विहारं परित्यज्य⁹ सर्पणं गत्वा वर्षमेकं यावन्निषीदति।

¹ But cfr. before, p. 149 n. 4.

² Cfr. *supra*. 149.

³ So the MSS. but the reading seems corrupt: is it to read: *līkaṣī-
sātantra*, viz., the system of *līkaṣīśa*, etc., considering *līkaṣīśa*, as a corrupt
form for *laguṣīśa*, *lakulīśa*, *nakulīśa*? It can be also the name of his
guru: in this case we need: *pārśve* or such like form.

⁴ For all these particulars cfr. the biographical account in bKa' bab-
bdun ldan, p. 23 ff. There also it is stated that before he was a *tirthika-
paṇḍita*, (cfr. *ekadāṇḍo 'bhūt* of our text and preceding note) and mention
of Ratnākaraśānti, Naro, etc., is made.

⁵ This *prakaraṇa* is perhaps that alluded to by TĀRĀNĀTHA, *Geschichte*
p. 241, viz., the “Vajrayānakotidvayāpoha” CORDIER, III, p. 82,

⁶ Therefore the identity of Dāmodara, Maitrīgupta and Advayavajra
is fully stated and it is supported by Tibetan tradition. Even in the
bsTan agyur he is said to have been the pupil of Śābara. CORDIER *Cat.*,
II, p. 45, n. 35, and he is indifferently called Advayavajra, Avudhūtipāda,
Maitri.

⁷ By the Siddha Nāgārjuna; it has been edited, as known, by L. De
La Vallée Poussin. Louvain. 1896.

⁸ Khasarpaṇa is the residence of Avalokiteśvara, cfr. TĀRĀNĀTHA.
Geschichte, p. 144.

⁹ It must be ख.

पुनरपि स्वप्ने गदितं “गच्छ त्वं कुलपुत्र दक्षिणापथे मनोभङ्गचित्तविश्रामौ
पर्वतौ¹ तत्र श्रवरेश्वरस्तिष्ठति । स च तत्रानुग्राहको भविष्यतीति । तत्र
च मार्गे सागरनाम्ना मिलिष्यसि² । स च राठदेशवाप्तिराजपुत्रस्तेनापि
साधं गच्छ” । पश्चाद्गते सति सागरेण मिलितः । उड्रदेशपर्यन्तेन मनो-
भङ्गचित्तविश्रामयोर्वार्त्तां न श्रुतवान् । श्रीधान्यं गत्वा वर्षमेकं स्थितः ।
पश्चात्त्याचुष्य उड्रदेशे साधिष्ठानतारां साधयितुमारब्धवान् । मासेनैकेन
स्वप्नो ऽभूत् “गच्छ त्वं कुलपुत्र वायव्यां दिशि पर्वतौ तिष्ठन्तौ³ । पञ्च-
दशदिनेन प्राप्य[२-२]ति” । भट्टारिकाया ‘वाक्येन वायव्यां दिशं संघातैः
साधं गच्छति प्राप्तिपर्यन्तं पुरुषेणैकेनोक्तम् । “परदिनं⁵ मनभङ्गचित्त-
विश्रामौ प्रापयेते लभौ । तत्र सुखेन वास्तव्यम्” । इति श्रुत्वा
पण्डितपादो हृष्टोऽभूत् । अपरदिनं प्राप्तम् । तत्र पर्वते दिने दिने दश
दश मण्डलानि कृतवान् । कन्दमूलफलाहारं कृत्वा दिनदशपर्यन्तं
शिलातले पर्यङ्कमारुह्य एकाग्रचित्तेन उपवासं कर्तुमारब्धः । सप्तमे दिवसे
स्वप्नदर्शनं भवति । दशमे दिवसे ग्रीवां क्लेत्तुमारब्धः । तत्क्षणात्साक्षा-
दर्शनं भवति सेकं द⁶दाति । अद्वयवचनोऽभूत् । पञ्चक्रमे चतुर्मुद्रादि-
व्याख्यानं कृतं द्वादशदिनपर्यन्तम् । पुनरप्युपदेशेन पञ्चदिनं यावत्, सर्व-
धर्मदृष्टान्तेन वीणां वादयति ॥ तत्र पद्मावली । ज्ञानावली । श्रवरेश्वरेण
आज्ञां दत्वा “प्राग्यातिपातादिमायां दर्शय त्वम्” । तदनन्तरं सागरः
काययूहं दर्शयति⁷ । पण्डितपादेनोक्तः । भगवन्किमप्यहं का[२-२]ययूहं

¹ Manobhaṅga is referred to also in TĀRĀNĀTHA. *Gesch.*, p. 148. But in bKa' bab bdun ldan the residence of Sabara is said have been Śrīparvata. Anyhow all these places were near *Śrīdhānyakāṭaka* the great importance of which is attested by literary documents (YÜEN CHWANG in WATERS, *Travels*, II, 214 ff. *Mañjuśrīmūlakalpa* p. 88., etc.) and archæological and epigraphic documents (cfr. *Annual Report of South India Epigraphy* 1924, 1926, 1927, *Nalinaksha Dutt* in *IHQ.*, V, p. 794). The dual which we find in our text may quite well refer to the two mountains Pūrvaśaila and Aparāśaila which are there p. 24.

² MSS. अति. Same story in bKa' bab bdun ldan, p. 24.

³ Sic. MSS.

⁴ Tārā.

⁵ MSS. Paramadimamana.

⁶ On *seka*, see HARAPRASĀDA ŚĀSTRĪ, *Advayavajrasaṅgraha*.
Introduct.

⁷ MSS. varṣayate.

निर्मयितुमशक्तः । शबरेश्वर आह । “विकल्पसंभृतत्वात्” । पण्डित
आह । “तर्हि किं कर्तव्यं मम ज्ञापयन्तु पादाः” ॥ शबरिपा¹ आह ।
“तवेह जन्मनि सिद्धिर्नास्ति देशप्रकाशनाः कुरु” ॥ अद्वयवच आह ।
“अशक्तोऽहं भगवन्कर्तुं कथं करिष्याम्यहम्” ॥ आह । “इह वच-
योगिनि-उपदेशात्करिष्यसि त्वम् । फलञ्च फलिष्यतीति” । इहोपदेश-
मित्युक्त्वा भट्टारकपादोऽन्तर्धानो ऽभूत् ॥

नेदं धनुर्न च मृगो न वराहपोतः

संपूर्णचन्द्रवदना च न सुन्दरीयम् ।

निर्माणनिर्मिततयार्थिजनस्य हेतोः

सन्तिष्ठते गिरितले शबराधिराजः² ॥

यथाश्रुतक्रमः समाप्तः ॥

(VII)

अमनसिकारे ॥ पूर्ववदकारादिचक्रं ³संपूज्य विहितभगवतौयोगः
प्रणवपौठादागतवदनः काण्डपाटाद्बहिर्गत्वा कृतपञ्चमण्डलो दत्तदक्षिणः
प्रणवपौठादागतवदन उपायचक्रं लिखित्वा ततः प्रवेश्य नौषांकितशिरः⁴व्क्
ख[३-२]हृदि चक्रं संस्मर्य वक्त्रेण वक्त्रं दत्वा तद्गृदि ध्यानमुखमापूर्य
वक्त्रभृताऽष्टोत्तरशतमन्त्रितं कृत्वा “मुहे मुहं देह मेल्”⁵ । तत उपाय-
चक्रमिति भ्रमन्तं विचिन्त्य मन्त्रितपुष्पताडनं डमरं घण्टां वा संवाद्य
साटोपमन्त्रं⁶मुच्चारयन् धूपं दद्यात् । यदि तस्य प्रकम्पादिनिमित्तमुप-
जायते तदैव कथनीयमन्यथा नैव । तदनु चक्रादुद्धृत्य मन्त्रदानं गुरुपरं-
पराकथनं कर्तव्यमिति ॥

सम्प्रदायविधिः ॥

1 MSS. शबरापिध.

2 Metu : Vasantatilaka.

3 Here we have the description of the *dikṣā*.

4 MSS. मन्त्रमुन्त्रमुच.

5 Mukhe Mukham dehi, me . . .

6 Sic.

(VIII)

एतदभिसन्धाय गुरुपर्वक्रमाज्ञायसम्प्रदायैकशाचटमिति । ¹ तत्कथा
च कथितया अज्ञोत्पादनार्थी । शिष्यज्ञानाद्विद्विभूयते । इह
जन्मनि यदि न सिध्यति तदा मरणसमये चक्रं तन्मखात्स्वमुखे प्रविश्य
स्वस्थानं एव लीनम् । इति लूयीपादादेशात्संवर्गवतन्तमानेतुमोडि-
यानं गतः । ² तत्र योगिनीपार्श्वे दिनचतुष्टयं यावत् स्थितो चौर्येण तत्तन्त-
मानीतं नदीपारे तथा दृष्टं एतत्साधनं सर्वमपि वायुना नीतं वचाङ्गना-
सकाशे । कुरुरीपादैः श्रुतमिन्द्रभूतिपादैर्लक्ष्मीकरविहपापादैः पैण्डपातिका-
डिङ्गरपैण्डपातिकाः ॥

(IX)

नमः श्रीवज्रयोगिन्यै ॥

प्रथमं यथासम्भवं पूजोपकरणं कुर्यात् । अग्रे बलिं स्थाप्य वामे मद्यपात्रं
पञ्चपौषसंयुक्तम् । वामकरे चन्द्रः । दक्षिणकरे सूर्यः । हृद्रश्मिनादेन
नासापुटेन निश्चार्य करे विलीय करप्रोधनम् । तत्करे मद्यपात्रं पिधाय
मन्त्रस्नानं पूजाद्रव्यञ्च प्रोक्षयेत् ॥ मण्डलीकरणञ्च त्रिकोणाकारेण मध्ये वं ।
उपरे यथाविधिप्रोक्षितदिव्योदकसमायुक्तसिन्दूरपूजा । अभावे पुण्या-
दिभिर्वीजपूजा । तदनन्तरं त्रिविशुद्धिमनुस्मरेत् । आत्मानं त्रैधातुक-
विशुद्धिकूटागारं विचिन्तयेत् भूटिति नाभिमण्डले भगवतीं भावयेत् ॥
मुद्राद्वययोगजो वाजपयः । तदनन्तरमग्रे निश्चार्य पूजा स्तुतिरमृतास्नान-
नम् । सर्वभौतिकदिक्पालेभ्यः श्रेष्ठामृतढौकं भगवतीं संहार्येत्याम्नायः ॥

VII

THE LĀMĀKRAMA AND THE INFLUENCE OF TIBETAN-
SPEAKING RACES ON THE TANTRAS

In many Tibetan translations of Buddhist Tantras one comes across the expression : *lhamoi rim pa*.

In such cases, one feels attempted to translate expressions of this kind by : *devīkrāma*. It is, in fact, known that *lhamo* is equivalent to *devī*. But if we have recourse to the Sanskrit original of the tantric texts connected with the cult of the *Dākinīs* and *Yoginīs* we shall realize that such a re-translation of the Tibetan term would not be exact.

¹ corr. arthinā ?

² Subject ?

In the Dākārnavatantra there is mention of the *lāmācakra*¹. In the Abhisamayamañjarī by Śāntirakṣita² we read mantras as the following; *om dākinīye hūm hūm phaṭ om lāme hūm phaṭ lāmāyā*.

Then, in a commentary upon the Laksābhidhānatāntra, the colophon of which runs thus: *Laksābhidhānād uddhṛtalaghvabhidhāne pindārthavivarananāmaprathamatikāpariccheda*, when the various *pīṭhas*, localised in the body, are described, we read (f 7, b): *ātmapiṭhe vajradākinī daksīnadale kanthapadme parapiṭhe lāmā pāścimadale nābhipadme mantrapīṭhe khandarohā*.

The same name is to be found among the varieties of the *sthalacarādākinis*: *svānī, lāmā, aśvī, khandarohā, hastinī, rūpinī, pracandā, gauḥ, meṣī, candāksī*, etc., (all are manifestations of Vajravārahi) and in the section dedicated to the *khecaraparivartinyah*; *vajradākinī, cātakī, lāmā, śukī, khandarokā, sārīkā, rūpinī, kokilā, pracandā, lāvī, candāksī, pārāvātī* (8, a). Mention of this *lāmā* is made, in very many other places, of the same commentary.

In Cakrasaṃvarapañjikā by Jayabhadra (p. 26. a) we have *kākāsyādya lāmāntāiti* (ntā doubtful), *lāmājāṭīyāḥ* (i.e., *yoginyāḥ*).

So that there is no doubt as regards the original form: *lāmā* common to many Buddhist Tantras connected with the cult of the Dākinis and Yoginis. It is quite easy to trace out the origin of this word; it is nothing else than the Tibetan *Lhamo*, she-devil. The Tibetan mythology is full, as it is known, of these female goddesses haunting mountains, passes, rivers, etc., and to be always propitiated. They existed before Buddhism, and, then, were introduced into it.³ But the mention in these Tantras of the *Lāmā* worship deserves our special notice, because it shows another channel of influence of foreign culture upon that complex and manifold literature which is represented by the Tantras. The northern borderland with its Tibetan-speaking races has evidently exercised some influence upon the development of these currents of thought and mystical practices, which are chiefly of popular origin though elaborated later on by the pandits and teachers of the various sects and freely accepted by the Buddhist or Hindu society. This mention of the *lāmācāra* supports, therefore, the statements of the Buddhist as well as brahminical traditions, when

¹ HARAPRASĪDA ŚĀSTRĪ, *Catal. of Sanskrit Manuscripts of Asiatic Society of Bengal*. I (Buddhist manuscripts) p. 94. l. 20.

² Some few leaves only of this work are preserved in the collection of His Honour the General Kesar Sham Sher Jung Bahadur Rana. The reference is very important because it gives a *terminus a quo* the existence of the *Lāmā*-worship was known in India.

³ This belief in witches is also to be found all over the borderland of Tibet. For Dardistan cfr. LEITNER, *Dardistan*. London, 1893. p. 23.

they speak of Mahācina¹ as the country of origin of some tantric worships. It was there that the Siddha Nāgārjuna went and was initiated into the cult of Ekajātā.² It was also there that Vasiṣṭha went in order to get *siddhi* from Tārā. This statement finds full support in the Dākṛṇavatantra where in the fourth *Paṭala* dedicated to Lāmā we find the north designated as the place of the *lāmās*: *Lāmottarakūṭipattiyoginī yūthanāyikā*. We cannot, however, better specify the character of these *Lāmās*; besides being goddesses they must have been witches, like the *dākinīs* and the *yoginīs* with whom they are connected. In fact, in the commentary upon the Lakṣābhidhānatāntra, already referred to, they are included among the *dākinīs* who are always considered as flying goddesses and whose name is, in the Tantras, related to the root: *dai* to fly, just as very often their special abode is said to be Uddiyāna, a name connected in the Tantras with the same root: *dākinyas*....: *ākāśacarāḥ*; *dai vaihāyasā gamanāṭi dhātupāthāt*.³ If it is not impossible, *a priori*, that flying witches were called after a root denoting their peculiar quality, it is also legitimate to suppose that we have, in this case one learned etymology of some foreign or at least vernacular⁴ name. There can hardly be any doubt that these *dākinīs*, *yoginīs*, *lāmās*, etc., were originally nothing else than local female godlings or goblins such as almost each village or town possessed and who were, later on, considered as manifestations or particular aspects of the most prominent female deities of India, viz., Durgā, Kālī, etc.⁵ In the commentary upon the Lakṣābhidhānatāntra (fol. 4, a) they are said to be: *sarvasattvāpakārinīyo grāmadaivatyaḥ pīṭhopapīṭhāśritāḥ*. In fact, in the list of these *dākinīs*, as they are given in our texts, we recognize quite well, from their own names, the popular and primitive character of many of them. They are in the form of animals, birds, or monsters with the body of

¹ The existence of such tradition is clearly indicated by some Tantras which in their title itself show a connection with the *Mahācina-sampradāya*. I quote for instance the: *Mahācinakrama*.

On Mahācina cfr. S. LEVI—BEFEO. 1905.

² One *Sādhana* edited by Doctor Benoytosh Bhattachārya and referred to in his learned introduction to the edition of *Sādhanamālā* has the following colophon: *āryanāgārjunapadair bhoṭeśuddhṛṣṭam* Vol. I, p. 267. For the legend connected with Vasiṣṭha cf. *Rudrayāmala* p. 149..

³ *Lakṣābhidhānatāntraṭīkā* fol. IV, 1 cfr. also *Cakrasaṃvara*, fol. 2, b. *dākinīya ākāśagaminyah*. *Vaiḥāyasyūṇi gatau dīyanta ityārtha*. The Tibetans follow this etymology in so far as, beside the form *Dākinī*, *Dākimā*, they use for this term the translation mk'a'agro ma, *ākāśa gamin-i*.

⁴ But cfr. Bengali: *dākā*, to call. In Bengal, the *Dākinīs* are still surviving in popular beliefs.

⁵ This has been shown in detail by me in my forthcoming volume on the Durgāpūjā.

women and the head of some animal, and in general, their terrific aspect is predominant; they are, as we saw, *sarasat-tvāpakārinīyah*. They can stay on earth, in the sky, in water. But at the same time their acceptance into the Tantras sheds a lot of light upon the various elements of which these texts were the outcome and their interpretation also by the Tantric teachers becomes extremely interesting, when we want to establish how these popular and somewhat primitive and crude beliefs were modified in a literature which represents the most powerful attempt at syncretism that we know. Taken from the low classes or from the borderland of India, from the villages and the peasants, and perhaps, from settlements of foreigners, they were adapted with their original names to the ritualism and to the mysticism even of the new schools. So the Tantras could claim to be strictly connected with popular beliefs and at the same time rise to a higher and more spiritual refinement. In the lower strata, these *ḍākinīs*, *lāmās*, *yoginīs* continued to receive their worship; in the debased Tantras concerned chiefly with the 6 *karmas*, meant to bestow worldly profit upon the *sādhaka*, these remained with their name, but designated the letters of the alphabet, *biṣa*, in the design of magic circle, *maṇḍala* or *cakra*; in a higher plane, that is in the *adhyātmapūjā*, they correspond to the arteries and veins, *nāḍī*, circulating in the body and the control of which is necessary during the *prāṇāyāma* according to the Hathayoga system considered as a most important element during the process of meditation.

At an even higher stage of symbolism, they represent, in the esoteric language of the *yogin*, the constituents of illumination, *bodhipakṣas*. In order to combine these contradictory elements the Buddhist tantric teachers were obliged to have recourse once more to the theory of the double truth, the relative and the absolute, *neyārtha* and *nītārtha* which plays such a great part in Mahāyāna: *lokasamvṛtyā ḍākinīcakraśamvaro laukikasiddhisādhanaḥ ityā iti. Nītārthena ḍākinīśamvara ityā. ḍākinī ityā saptaśatīṣaḥ bodhipakṣīkadharmāḥ; teṣāṃ cakram samūho dharmakāyalakṣaṇaḥ śūnyatā. tasya svabhāvīkākāyena nīrāmbakarūpātmaṇa saha samvaram ekatvam. atra ca karuṇā candro bodhicittaṃ pañcaviṃśatīśaṣipadalakṣaṇam mahāsukhaṃ nīrāvaranam; sūryo dvādaśaśūnyatātmaka ityā. tena saha samvaro ḍākinīcakraśamvaras; taṃ vaksye aham . . .*

APPENDIX

LIST OF THE DĀKINIS ACCORDING TO THE LAKṢĀBHIDHĀNATANTRĀTĪKĀ¹

sthalacarajalacaravanacararūpaparivartinyah dākinyah

cakraḍākinī	damṣṭrī
śvānī	lankeśvarī
lāmā	araṇyaśvānī
śśvī	drumachāyā
khaṇḍarohā	araṇyasimhīnī
hastinī	airavatī
rūpiṇī	gaṇḍī
gau	bhairavī
pracandā	vyāghrī
meṣī	vāyuvegā
caṇḍākṣī	rkṣī
ajī	surābhakṣī
prabhāvatī	nakulī
hariṇī	syāmā devī
mahānāsā	camarī
khari	subhadrā
vīramatī	jambukī
sūkari	hayakarnā
khavarī	khagānanā
vidālī	kūrmī
cakravegā	mahāvīryā
kumbhinī	śaṅkhinī
khaṇḍarohā	kākāsyā
kapardikā	ulūkāsyā
śaundinī	godhī
karkatī	mūṣakī
cakravarmīnī	śvānāsyā
matsī	śālijātakī
suvīrā	sūkarāsyā
makarī	vānarī
mahābalā	yamadādī
darḍuri	gavali
cakravartīnī	yamadūtī
yamamathinī	sallakī
kṛtalasī	yamadamṣṭrīnī

khecara rūpaparivartinyah [dākinyah]

lāmā	pārāvati
śukī	prabhāvatī
khaṇḍarohā	bakī
sārikā	mahānāsā
rūpiṇī	catakī
kokilā	vīramatī
pracandā	cakravākī
lāvi	khavarī
caṇḍākṣī	hamṣī

¹ To many of them special chapters are dedicated in the *Dākāṇṇava-tantra*.

lankeśvari
yāñci
drumacchāyā
vṛkṣārini
kokilākṣi
śaundini
rajaki
cakravarnini
bhagavati
suvirā
tittiri
mahābalā
sārasi
cakravartini
jalakāki
mahāviryā
balākā
kākāsya
nilākṣi
airavati
kāki
bhairavi
grdhri
vāyuvegā
ghuki
surābhakṣi

mṛgārini
śyamā-devi
śikhinī
subhadra
kukkuti
hayakarnā
bhedini
khagānanā
cakravegā
kruñci
khaṇḍarohā
ulūkāsya
cakori
svānāsya
anilā
sūkarāsya
vāgdhulikā
yamadāḍi
bukki
yamadūti
tiṭṭibhi
yamadamṣṭrini
bheruḍi
yamamathanī
ambaraki

Development of the Rtusamhāra Theme in the Rāmāyaṇa.

By C. W. GURNER.

It is the object of the following notes to call attention to two passages in the Kiṣkindhakanda of the Rāmāyaṇa which are of importance both as early examples of Kāvya writing, and in their bearing on the conventional literature of the Seasons in Sanskrit. These are the set pieces on "The Rains" in the twenty-eighth Sarga, and on "Autumn" in the thirtieth Sarga. There is nothing else quite like them, as a sustained piece of Kāvya writing, in the Rāmāyaṇa; and I will lay down three postulates about them, the last of which alone seems open to any kind of question. These passages are an insertion representing a later stratum of literature than the original epic, they are the work of the same hand, or at least of the same school, and finally they have their place in the development of Kāvya between the Rāmāyaṇa as an Ādikāvya and the classical Sanskrit period of Kālidāsa.

Without attempting the rather sterile task of picking out the exact junctures of supposed insertions in the Rāmāyaṇa let me resume briefly the context in which these two Rituvarṇanas are found. The twenty-sixth Sarga describes the coronation of Sugrīva after the defeat of Bali. In the twenty-seventh Rāma retires to Mt. Prasravana, and the opportunity is taken for a descriptive passage on mountain scenery ending with the despair of Rāma and his encouragement by Lakṣmana. The Sarga ends with a few lines by Rāma, of importance for our purposes, beginning.

शरत्कालं प्रतीक्ष्ये स्थितोऽस्मि वचने तव ।

सुग्रीवस्य नदीनां च प्रसादमनुपालयन् ॥

R, IV, XXVII, 44.

Sarga twenty-eight then ends loff with the line.

स तदा बालिनं हत्वा सुग्रीवमभिषेच्य च ।

वसन्माल्यवतः पृष्ठे रामो लक्ष्मणमब्रवीत् ॥

R, IV, XXVIII, 1.

Perhaps most readers will feel something a little unexpected about it, a certain insouciance as to the scene imme-

diately preceding. This is followed immediately by the description in Rāma's mouth of the Rains, the first of my two set pieces. Lines 2 to 14 are in Śloka. Then comes a long homogeneous passage in Upajāti metre (l. 15 to 50). There follow three more descriptive lines in Śloka, and with the neatest possible transition we are back to Rāma's despair in waiting. And not only are we back to the same theme, but in the same words

तस्मात्कालप्रतीक्षोऽहं स्थितोऽस्मि शुभलक्षण ।

सुग्रीवस्य नदीनां च प्रसादमभिकाङ्क्षयन् ॥

R, IV, XXVIII, 63,

the three concluding lines of the Sarga being a word for word repetition of the three lines following the same phrase in Sarga twenty-seven.

At the opening of Sarga twenty-nine the scene is shifted to Kiṣkindha, where we see Sugrīva as the picture of a dissolute monarch on whom Hanumān urges sound advice about duties to a superior ally with pre-existing obligations. In matter and language the whole passage is thoroughly characteristic of the genuine Rāmāyaṇa epic.

In the thirtieth Sarga we return again to Rāma; and its opening describes in the simplest language his distress at the sight of autumn in the absence of Sītā, while Sugrīva delays

कामवृत्तं च सुग्रीवं नष्टां च जनकात्मजाम् ।

दृष्ट्वा कालमतीतं च सुमोह परमातुरः ॥

R, IV, XXX, 3.

His thoughts shift to the distress which autumn will provoke in Sītā in her hour of separation.

R, IV, XXX, 8.

पुष्पितांश्चासनान् दृष्ट्वा काञ्चनानिव निर्मलान् ।

कथं स रमते बाला पश्यन्ती मामपश्यती ॥

R, IV, XXX, 8.

This phase ends in line 12, immediately after which Lakṣmana, meeting Rāma, offers further encouragement, this time in Upajāti metre. On this follows in Rāma's mouth the second set-piece, that on Autumn, still taking off from thoughts of Sītā.

अथ पद्मपलाशाक्षीं भैषिलीमनुचिन्तयन् ।

उवाच लक्ष्मणं रामो ॥

R, IV, XXX, 21.

Up to line 27 this Rituvarṇana proceeds in Śloka, describing in fact not the new season but the cessation of the rains. With the following line there begins a long passage in Upajāti metre on autumn (ll. 23-57), which is in every way parallel to that on the rains except for the insertion of one remarkable Śloka. After this passage there follow six ślokas, still descriptive of autumn but of a much simpler character, then a couple of lines recalling the motif of separation from Sītā, and with the same facility of transition we are back to a characteristic epic strain on the ingratitude of Sugrīva followed by threats. It is particularly significant that the unusually detailed summary of this passage in the index in R, I, III, which is linked up with it in fact by the peculiar word वर्षरात्रं (cp. IV, xxx, 1.) gives no hint of the existence of these two Rituvarṇanas.

ताराविलापं समयं वर्षरात्रिनिवासनम् ।

कोपं राघवसिंहस्य बलानामुपसंग्रहम् ॥

R, I, III, 24.

Quite apart from style and diction the peculiar tangle of motifs in the passage summarised indicates a later insertion. *Primā facie* one would be disposed to regard the inserted Rituvarṇana as coinciding with the two passages in Upajāti metre. Notice particularly how the six ślokas following the Upajāti passage in the thirtieth Sarga are of a cruder and simpler style than those preceding them. Such a line as

असताः सप्तपर्णाश्च कोविदाराश्च पुष्पिताः ।

दृश्यन्ते बन्धुजीवाश्च श्यामाश्च गिरिसानुषु ॥

R. IV, XXX, 62,

abandons all the beauty of the long descriptive passage for what may be called the "catalogue method" of nature painting, the enumeration of bare lists of trees or flowers, which is so characteristic of the archaic epic and appears for instance in the description of Mt. Prasravana (e.g. XXVII, 17). But I do not feel sure that the whole of the Śloka passages in the twenty-eighth and thirtieth Sargas lie outside the later material. I shall probably carry most readers with me if I maintain that Sarga 28 as a whole between the lines repeated verbatim, and Sarga 30 as a whole between the first and the second passage on Sītā in separation mark the outer limits of the later Kāvya element. That this later Kāvya element does exist in these two Rituvarṇanas I must now establish.

Let us turn at this point to an earlier Rituvarṇana in the Rāmāyaṇa, which, if any such passages do, must belong to the

original epic stratum. This is the description of the Hemanta season in the sixteenth Sarga of the Aranyakanda.

R, III, XVI, 1-26.

शरद्वपाये हेमन्तऋतुतरिष्ट प्रवर्त्तत

And in passing one may note the implications of the bare half line. A writer archaic enough to drop the augment is already thinking of the six seasons in their conventional ordered succession; for हेमन्त is not the word he would have used of the cold weather were there not शिशिरः to follow. And how does he treat the description? In a series of short simple sentences, pleasant to the ear, but devoid of any complicated euphony, he picks out the leading natural features of the season, mildness of the sun and fogginess of the nights, the activities of priest, monarch, and peasant, rice-fields at the point of ripeness, elephants shrinking from the cold water, rivers half hidden in the mist, and withered lotus beds. There are a few very simple similes, and an occasional neat little effort in the manipulation of words.

दिवसाः सुभगादित्याश्चायासलिलदुर्भगाः

Ibid., 10.

The rhythm is that of polished śloka verse, but in rather an elementary stage.

If one reads the two later Rituvarṇanas in comparison with this passage one is conscious at once of being in a different world of poetry, albeit evolved from the same elements. The steady run of short simple sentences has disappeared. Here is a writer who rounds off each natural feature in an elaborately constructed couplet, and heightens the effect by interspersing among these couplets a series of staccato clauses or piled up verbs and nouns.

विचरन्ति महौपाला यात्रार्थं विजिगीषवः

Ibid., 7,

writes the earlier hand.

रजः प्रशान्तं सहिमोऽद्य वायुर्निदाघदोषप्रसराः प्रशान्ताः

स्थिता हि यात्रा वसुधाधिपानाम्

R, IV, XXVIII, 15,

writes the latter, or

सूर्यातिपक्वामण्यनष्टपङ्का भूमिश्चिरोद्वाटिसान्द्ररेणुः ।

अन्योन्यवैरेण समायुतानामुद्योगकालोऽद्यनराधिपानाम् ॥

Ibid., XXX, 37.

The verse is compactly built up in one grammatical and harmonious unit, in a manner unknown to the earlier passage.

But what characterises these two later Riturvarṇanas above all is a new power of constructive imagination in the poet. One hesitates to apply the conventional terms *Alaṅkāra*, the meaning of which varies so much in different authorities as to confuse rather than to assist. But, if we take the essence of Dandin's *Utprekṣa* to be in the novelty of interpretation of an observed object through the imaginative faculty

अन्यथैव स्थिता वृत्तिश्चेतनस्येतरस्य च ।

अन्यथात्वेत्येते यत्र

Kāvyad. II, 221,

this figure dominates the two *Sargas* in the *Kiṣkindhakaṇḍa*. The conception of nature's concert (*R*, IV, XXVIII, 36) of the peacocks as dancing girls (*Ib.*, 37) of the sky roaring in pain (*Ib.*, 11) of autumn imparting her glory to trees and flowers (XXX, 28) of the cranes as a wreath in the sky, such may be singled out as instances of the powerful imaginative faculty which distinguishes the new poet from the old. It finds its fullest expression in the personification of nature in the terms of femininity, to which I shall recur later on.

The boundary line between *Utprekṣa* and *Upamā* is often almost imperceptible to the Western critic, and the same imaginative faculty underlies the comparison of the clouds to war elephants (XXVIII, 20 and 31) and of the lake at night to the night sky.

सुप्तैकहंसं कुसुदैरुपेतं महाङ्गदस्थं सलिलं विभाति ।

अनैर्विमुक्तं निशि पूर्णचन्द्रं तारागणाकौर्णमिवान्तरिक्षं ॥

Ibid., XXX, 48.

Along with this imaginative element goes an intensity of descriptive power, which, if not in the same degree a new factor in poetry, does distinguish the new writer from the old. It runs alike through the similes and through passages of nature-painting to be classed, probably, as *Svabhabokti*, such as the description of the snakes

अनेकवर्णाः सुविनष्टकाया नवोदितेष्वम्बुधरेषु नृताः ।

क्षुधादिता घोरविषाविलेभ्यश्चिरोषिता विप्रसरन्ति सर्पाः ॥

Ibid., 44.

On the other hand this writer, who is obviously a great creative poet, and who, if my analysis is accepted at all, is taking the art of *Kāvya*-writing a stage beyond the *Ādikāvya*

of the original epic, makes very little use of what subsequently became its most distinctive feature, *slesha* or double-meaning. It occurs in a very simple form in one or two similes, e.g., the

तडित्यताकाभिरलङ्कृतानाम्

Ibid., XXVIII, 31,

of the clouds and war elephants, and the शशाङ्कोदितसौम्यवक्त्रा of the lady night (XXX, 46). But generally speaking one may say that there is no striving after double-meanings in passages in which it would be regarded as a *sine qua non* by the later Kāvya writers. Even when the conventional Kāma appears on the scene, it is by no means easy to make the familiar बानासन bear the meaning of a bow as well as the two flowers

प्रफुल्लवानासनचित्रितेषु वनेषु

Ibid., XXX, 56,

and it seems just possible that the poet was thinking only of the flowers.

Similarly there is not a great deal of the conventional Śabdālankaras in these two Sargas, though perceptibly more than in the standard epic style. But all the while the writer is experimenting with words, trying new effects. The Yamaka of course is among them. He amuses himself with the manipulation of इन्द्र in two lines in Sarga 28, for which simpler parallels might be found in the oldest stratum, but probably nothing of the same complexity.

मत्ता गजेन्द्रा सुदिता गवेन्द्रा वनेषु विक्रान्तरा मृगेन्द्राः ।

रम्या नगेन्द्रा निभृता नरेन्द्रा प्रक्रीडितो वारिधरैः सुरेन्द्रः ॥

Ibid., XXVIII, 43, cp. 46.

There is an elementary yamaka in

गृहीत चापोद्यतदण्डचण्डः प्रचण्डचण्डोद्य वनेषु कामः

Ibid., XXX, 56.

Or again he plays off adjective and noun.

नौलेषु नौला नववारिपूर्णं मेघेषु मेघा

Ibid., XXVIII, 40,

or piles up verb and noun with distributive dependence

वहन्ति वर्षन्ति नद्यो घना etc.

Ibid., 27,

or repeats the same verb, in the figure of verbal Avritti,

निद्रा शनैर्केशवमभ्युपैति द्रुतं नदीसागरमभ्युपैति etc.

Ibid., 25,

or slips in the repeated gerund in both Sargas, as a small indication of identity of authorship.

विश्रम्य विश्रम्य lbs. 22 विक्षोभ्य विक्षोभ्य

XXX, 41.

All these verbal ornaments, it may be noticed, are reproduced in the Sanskrit writings of Aśvaghoṣa, the only professed Kāvya writing we know of between the Rāmāyaṇa and Kālidāsa; and it is significant that there should be so much resemblance between that writer and the poet of these two Sargas. Whether or not they must have been known to Aśvaghoṣa is a question to be avoided in this article.

One theme of particular interest in these descriptions of Autumn and the Rains is the interpretation of Nature in the terms of passion, the infusion of Śringāra Rasa. In fully developed Kāvya this is the dominating feature in all descriptions of nature and of the seasons. It is expressed throughout in the Ritusamhāra of Kālidāsa, in which the seasons tail off one by one into purely erotic writing. In this earlier strand of Kāvya in the Rāmāyaṇa one can trace the obsession at an earlier stage.

If we return for a moment to the Hemanta of the Aranya-kānda Sarga 16, we find ourselves back beyond this phase of thought altogether. The writer of that passage is interested in Nature for its own sake, without its erotic implications. To be sure, even this early poet does not contemplate Nature without some shade of feminine association in his mind.

विहीनतिलकैव स्त्री नोत्तरा दिक्प्रकाशते

R, III, XVI, 8.

But this chaste and straightforward simile represents the limit of his interest in the theme. Notice how much he misses that later Kāvya would have leapt at. He touches on the activities of the three castes प्राज्यकामा जनपदा etc. III, XVI, 6 but *not* what the women do. Contrast the Hemanta of Kālidāsa. He thinks of the long cold nights शीतवृद्धतरायामास्त्रियामाः

Ibid., 12,

but not of company or absence which makes them shorter or longer. Contrast Bhartrihari's imitation तेष्वाययामा etc.

Bhart. Śringāraś, II, 98.

If, as I am inclined to believe, the concluding ślokas of the Autumn in the Kiśkindhakaṇḍa (XXX, 28-30) survive from the earlier hand, the contrast would need qualification. But taking the Hemanta as it stands one finds in it the nature poetry of a mentality untouched by the Śringāra Rasa, devoid of erotic obsession.

In the two Sargas of the Kiśkindhakaṇḍa one is conscious at once of a change of mentality. Śringāra Rasa, the erotic tone, is making itself felt. Not, to be sure, in the same degree as in the later Kāvya. It is far from being the writer's sole or dominant interest in the description of nature. But the thought runs at the back of his mind.

This Śringāra Rasa, in the conventional nature painting of Kāvya, poetry finds expression in four aspects, namely, in allusion to the passions of the animal world, in the personification of nature in terms of femininity, in the thought of lovers' purposes served by the seasons, and in the erotic associations, such as the thought of meeting or of the loved one's countenance, which natural objects excite. All are to be found, in a comparatively unobtrusive form, and still as a matter of subsidiary rather than of primary interest in "The Rains" and "The Autumn" of the Rāmāyaṇa.

Why, for instance, should almost every mention of the birds of the air and the beasts of the field have some shade of erotic colouring? The writer can hardly think of cattle, elephants, bees, and above all peacocks without slipping in just the one word which defines the thought. While occasionally it breaks out from its subsidiary position and becomes the primary interest in the animal world.

स मन्मथा तौवतरानुरागा कुलान्विता मन्दगतिः करेणः

R, XXX, 39.

The personification of nature in terms of womanhood is a large subject, to which I alluded when mentioning the imaginative power of this writer. A simple instance is the personification of rivers, not exactly as nymphs, but as women in love; and it was quite probably a stock theme even before this writer worked it up.

मौनोपसंदर्शितमेखलानां नदीबधूनाम्

Ibid., 54.

There is far greater individuality and imaginative power in the bold Utprekṣa pictures of the intoxicated woods, and of the peacocks as dancing girls (*Ibid.*, xxxviii and xxviii, 37). Or again this personification covers a still wider field in the womanhood of Evening and Night portrayed in two conse-

entive lines (xxx, 44, 45). The former of these is the stray Śloka embedded in the Upajāti context; and the remarkable beauty and finish of its expression, no less than the metrical anomaly, make inevitable the query whether it is not the insertion of a still later Kāvya poet.

चच्चन्द्रकरस्पर्शहर्षोन्मीलिततारकाः।

अहो रागवती संध्या जहातु खयमम्बरम् ॥

Ibid., 45.

The utility of the Seasons for lovers' purposes leads away from the primary interest in nature itself, which still marks this early Rituvarṇana, and the thought occurs only in an elementary stage.

इमास्ता मन्मथवतां हिताः प्रतिहिता दिशः

R, XXVIII. 13.

Particularly instructive is the contrast between this rather vague idea and the clearly-cut convention of the Abhisarika amid lightning and clouds, which had presumably not taken shape at the time of this early writer. Similarly under the head of erotic associations one may instance the line on Meetings (so reminiscent of a poem of Shelley's),

निद्रा शनैः केशवमभ्युपैति द्रुतं नदीसागरमभ्युपैति ।

हृष्टा वलाका वनमभ्युपैति कान्ता सकामा प्रियमभ्युपैति ॥

R, XXX, 25,

“and the rivers kiss the sea.”

Before leaving the element of Śringāra Rasa one may mention too the introduction of the personified Kama with his bow. It is noticeable as an early instance of the specific convention कामस्य वृत्तत्वम् among those enumerated in Rajasekhara's Kāvya-mimansā 187 and suggests many questions about the date and genesis of this figure.

It is impossible to dwell longer in this context on the very wide subject of Śringāras Rasa in nature painting; but it is clear that in the poetic mentality of this writer in the Rāmāyaṇa are to be found all the elements of the later developments of the literature of the seasons.

It is hardly necessary to argue at length that the two passages on “Autumn” and “The Rains” are the work of the same hand, or at least of the same school. Instances have been taken indifferently from both, and close perusal of the two Sargas will leave most readers with a clear impression of their common authorship. Apart from the general uniformity of

style there are close parallels, almost cross references between one Sarga and the other (e.g., xxx, 43 and xxviii, 36, xxx, 47 and xxviii, 33). The use of the word चाप्यायिन (xxx, 38 and xxviii, 21) is a petty point of identity.

Now the intensive study of two isolated Kāvya episodes in the Rāmāyaṇa derives interest only from their bearing on the history of Kāvya poetry. And in so specialised a subject as the Seasons the enquiry turns naturally on comparison with the Rīṭusaṁhāra of Kālidāsa, that poem being the earliest classical Kāvya extant. The resemblances are so marked that only one of two conclusions is possible, either that "The Rains" and "The Autumn" of the Rāmāyaṇa were known to and imitated by the young Kālidāsa (or whoever the author of the Rīṭusaṁhāra may have been), or that they were themselves the interpolation of a writer acquainted with that poem. I merely state this latter alternative to anticipate the objection to my postulate that the passages in the epic date between the original epic stratum and Kālidāsa. Another reader, who agrees that they are not the work of the original epic writer might consider them a comparatively insipid interpolation in the days of the later Kāvya. To my mind, the whole course of literary development in Sanskrit seems to necessitate regarding the Kāvya passages analysed above as earlier than the Rīṭusaṁhāra. At the same time the resemblances with Kālidāsa do not of course exclude the possibility of intermediate Kāvya writers between the two pieces of literature. The author of the Rīṭusaṁhāra may have been carrying on the tradition of intermediate works which have disappeared, and not be imitating direct the Seasons in the Kiśkindhakaṇḍa. However, that may be, it is surprising to find how close the resemblances are; and they immediately bring these two passages in the Rāmāyaṇa into relief as a definite step in the evolution of this poetry of the conventionalised seasons.

Of the general personification of Nature in the Rīṭusaṁhāra nothing need be said. But take so precise a detail as the red insects on the grass, which suggests to the earlier writer a woman wrapped in green cloth with red spots.

बालेन्द्रगोपान्तरचित्रितेन विभाति भूमिर्नवशाहलेन ।

गात्रानुपुक्तेन शुक्रप्रभेण नारीव साक्षोद्धितकम्बलेन ॥

R, IV, XXVIII, 24.

Kālidāsa substitutes for this rather crude, if vivid simile, the more conventional jewellery, and may be thinking of fireflies rather than of red insects, but in words, cadence, and idea the influence of the one passage on the other is unmistakeable.

विभाति युक्तेतररत्नभूषिता ।
वराङ्गनेव क्षितिश्चिद्रगोपकैः ॥

Ritus, II, 5.

If the writer in the Kiṣkindhakāṇḍa dwells twice on the idea of the dancing peacocks कचिद्वृत्ता इव नीलकण्ठैः ।

XXVIII, 33,

and कचिद्वृत्तैः कचिदुन्नदद्भिः (*Ibid.*, 37) Kālidāsa must do the same प्रवृत्तवृत्तं कुलमद्यवर्हिणाम् and प्रवृत्तवृत्तैः शिखिभिः समाकुलम् ।

Ritus ; II, 6, and 16.

The intoxication of the woods in line 33 quoted above is recalled, with variation of features in Ritus : II, 23. The stock theme of the rivers in their course to the sea is repeated by Kālidāsa with such close verbal resemblance as to make irresistible a correction of the Bombay text of the Rāmāyaṇa notwithstanding the commentator.

तटानि श्रौणान्यपवाहयित्वा...
दृतं स्वभर्तारमुपोषयान्ति ।

R, IV, XXVIII, 39.

But read दृतं for दृतं and compare.

निपातयन्त्यः परितस्तटद्रुमान्
प्रयान्ति नद्यः त्वरितं पयोनिधिम् ।

Ritus, II, 7.

The personification of the rivers appears again in a still more characteristic form in the Autumn both of the epic and of Kālidāsa, though in this case the epic passage quoted may possibly be a survival from the earlier epic hand.

दर्शयन्ति शरन्नद्यः पुलिनानि श्रनैः श्रनैः ।
नवसंगमसत्रीडाजघनानीव योषितः ॥

R, XXX, 58.

नद्यो विशालपुलिनान्तनिलम्बबिम्बा ।

Ritus, III, 3.

The personification of Night in the terms of womanhood, which is the very soul of the later Kāvya, is followed, feature by feature, in the Ritusamhāra, with a master touch of differentiation at the close. As this is the last of my quotations, and of particular importance for the purpose I would reproduce it in full.

रात्रिः शशाङ्कोदितसौम्यवक्त्रा
तारागणोन्मीलितचारुनेत्रा ।
ज्योत्स्नांशुकप्रावरणा विभाति
नारौव शुक्लांशुकसंवृताङ्गौ ॥

R, XXX, 58.

तारागणप्रवरभूषणमुदहन्तौ
मेघावरोधपरिमुक्तशशाङ्कवक्त्रा ।
ज्योत्स्नादूकूलममलं रजनौ दधाना
वृद्धिं प्रयात्यनुदिनं प्रमदेव बाला ॥

Ritus, III, 7.

ness of resemblance in descriptive detail, coupled with forward in poetry which winds up the stanza of Kāli-kes this an admirable instance to establish both that poet knew the other, and that Kālidāsa was the later 70.

discomfiture of the peacocks by the geese R, IV, XXX, he association of the Sarasa with the rice-fields at the ripeness (*Ibid.*, 47) are features of autumn reproduced āsa, the former in Ritus, 11, 13 and the latter *Ibid.*, 16. other hand one incident of the seasons on which the epic or rather the writers in both strata of the epic, are in- as little interest for Kālidāsa in the Ritusamhāra. This effect on roads and campaigning (R, III, XVI, 7; R, IV, 15; *Ibid.*, XXVIII, 53; *Ibid.*, XXX, 37 and 60) an as- autumn with which Kālidāsa is of course more concerned aghuvamśa (Ragh, IV, 24).

above are a series of parallels all of which would fall the scope of imitation in language or idea, Sabdartha- as defined by Rājasekhara. It is perhaps worth while a few of the subconscious reminiscences or echoes, in the the same word in the same position, e.g., मनोज्ञ R, IV, 34 and Ritus: III, 3, विपक्षशालि in R, IV, XXX, 47 and III, 13, भिन्नाञ्जन Ritus: III, 5, IV, " and R, IV, XXVII, 14 probably of the earliest stratum कदम्बकूटार्जुनसंजनौप in III, 13, to be compared with the component elements कदम्बसर्जार्जुन, नौपार्जुन

R, IV, XXVIII, 4, 34, 41.

details are not of much importance in themselves, but e the effect of the more obvious imitations. It is hardly try to enumerate trees, flowers and fauna mentioned by the ets. Kālidāsa reproduces the conventional list for the two s already appearing in the epic. Among the petty verbal

indications of an early date for the two passages in the Kiśkindhakāṇḍa may be mentioned the absence of the extremely artificial word द्वित् for bee, common in Kālidāsa.

To sum up I would suggest that it has been possible to isolate in Sargas 28 and 30 of the Kiśkindhakāṇḍa two passages Riturvarnana by an early Kāvya writer who represents a stage of literature perceptibly later than that of the original epic; and that these passages were already in the Rāmāyaṇa as known to the young Kālidāsa (or other author of the Ṛtusamhāra) and had an immense influence on him and through him on the poetry of the Seasons in classical Sanskrit.

The Psychological Simile in Āśvaghoṣa

By C. W. GURNER

The psychological interest is one of the outstanding characteristics of the Sanskrit poetry of Āśvaghoṣa.¹ This indeed is only natural to a writer who was a teacher and philosopher before he was a poet, and whose Kāvya writing is professedly intended as "a medicine for a mind diseased" or in his own words as a bitter drug sweetened with honey (S. XVIII, 63). In illustration of this attitude one might dwell at some length on his development of psychological detail. The picture of indecision in departure (S. IV, 42 and B. IX, 71) of the body that goes while the mind remains (B. VI, 67) are instances which were imitated by later writers. The analysis of mental trouble (S. VIII, 5 ff) and the process of education and conversion (S. X, 42; S. XII, 1 ff; S. XVI, 52-67) have for Āśvaghoṣa a profound technical interest of their own. He brings to bear on these themes whole batteries of similes in his effort to derive from Kāvya writing the maximum of didactic power, such for instance as the series illustrating concentrated effort on self-improvement by digging for water, fire sticks, river erosion, cultivation, pearl fishing, conquest, etc. (S. XVI, 97-98). The later Sargas of Saundarananda are dotted throughout with these similes for mental states, *e.g.*, for the impulse to dharma through faith from the faith that promotes digging for water and cultivation of the fields (S. XII, 33), for the unworldliness of the saint from the detachment of the gold from dust and of the lotus from water (S. XIII, 5, 6), and for the stages of enlightenment from the processes of working gold (S. XV, 66-67 ff). In particular, whether from some special acquaintance with medical science, or from the obvious aptness of the comparison, Āśvaghoṣa applies, with remarkable frequency, by simile and otherwise, the terms of sickness and medicine to mental states. Especially significant is a long technical passage about the treatment of Kapha, Pitta, and Vayu (S. XVI, 59-69), and commonplaces of simile such as the unpleasant dose (S. V, 48), unsuitable food (B. IX, 39), the antidote to poison (S. XII, 25; S. XVIII, 9), "complications" (S. XVII, 9), the world as a sick man (B. XIII, 61), and the analogy of illness to sorrow (B. VIII, 76) are scattered through the two poems.

¹ N.B.—Editions referred to are:—

Buddhacharita—B. B. Cowell, Oxford, 1893.

Saundarananda—E. H. Johnston, Oxford, 1923.

It is not my object in the present note, however, to study the psychological interests of Āśvaghōṣa as a whole, but to draw attention to a localised feature in his poetry which is derived from these interests. This is the use of what may be called the introspective or psychological simile, the simile from consciousness and conduct, used either to illustrate a purely external object described or, more frequently, to illustrate one process of consciousness or conduct from another.

Now this is something distinctive in literature. It is not uncommon for a poet to draw a simile from natural objects for mental experience, from moving water to indecision for instance. And the reverse process of using the mental experience as the source of the simile is not unknown even to the Sanskrit epic. The frequency, however, with which it occurs in Āśvaghōṣa gives quite a special note to his Kāvya, and one may fairly suggest that it is largely through Āśvaghōṣa's influence that this type of simile does find an established, though by no means so prominent a place, in later Kāvya, including, of course, that of Kālidāsa.

Let us take, to begin with, this type of simile in Āśvaghōṣa in its simplest form, a mere commonplace illustrating a scene. The Āśram, at the opening of the Saundarananda with its sandy stretches, suggests artificial colour on the limbs साङ्गराप द्वाभवन, a purely external personification (S. I, 7). It is "befriended" by its lakes बन्धनानिव यस्तस्मै (S. I, 8):—a commonplace, but the process of illustrating a theme from consciousness has begun, while finally, "It looked fair, and flourished with its line of forest in full growth of flower and fruit like a man with good means" नरः साधनवानिव (S. I, 9). Precision as to the idea introduced by the isolated and unexpected epithet—good works or material resources—is hard to reach, but the passage as a whole well illustrates the tendency to draw simile from facts of consciousness and conduct.

Except by way of introduction, these three verses do not attract much attention. Turn now to a fully developed passage in the use of the psychological simile to describe external action, the attack on the Buddha of the hosts of Mara (B. XIII, 46-51). "The arrow which another placed on his bow burst there into flames and leapt not forth, as the wrath of an impatient man devoid of self-control is rendered futile. The five arrows discharged by another remained stationary in the air, nor fell on the saint, like the five senses of a philosopher fearful of the world at the approach to the sensual field. And he who with murderous intent seized and aimed a club in anger against the saint fell helpless from inopportune effort as the world falls into vices to its own undoing. A cloud-black woman skull in hand with intent to charm the seer's mind moved unsteadily to and fro, nor stood fast, like the understanding of the fickle-minded man in study. One directing his flaming

eye to burn up the saint with the fire of his eyes, like a poison-snake, saw him not sitting there, as a man given to sensual passion sees not the good in which he is instructed. Another lifting a heavy rock struggled in vain, with his effort thwarted like one desirous by fatigue of the body to attain the highest dharma approachable only through knowledge and contemplation." It will be obvious, as this long introspective passage goes on, how Āśvaghoṣa has sacrificed his descriptive power to his psychological and didactic interest. The simile from impotent passion does throw a touch of vividness on the arrow ablaze on the bow string. But by the end of it the laboured simile from mistaken spiritual endeavour to the Sisyphus effort with the rock serves no genuine purpose of a simile, but is introduced primarily for its didactic value on a favourite Buddhist theme.

This is quite the most striking and sustained passage in illustration of the external from consciousness and conduct, implying, as it does, the psychology of intellectual application and of sense control as well as a whole background of moral principles. More vaguely imaginative is the quasi-personification of the āśram with its sacrificial fires, groups of rishis, and the murmur of devotions in its shrine as the fulfilment of dharma (B. VII, 33). Just as in a more commonplace passage Buddha himself is the image of Dharma (B. X 19). (Certain other elaborate allegorical personification of Dharma lie outside my present scope.)

On the other hand, a purely descriptive passage in the Saundarananda of animal life in the thickets of the Mountain-side has unexpectedly, if not indeed inappropriately, two illustrations of a more subtle and less didactic psychological significance. "The Chamar was caught in the hanging branches amid the waving Kadamba flower on the mountainside and could tear away the tail adhering no more than a man of noble conduct can tear away affection bred in the family" (S. X, 11) (whether affection be personal or of high ideals). And again, "from hill to hill the monkeys weighed down the Devadaru trees as they passed along, and obtained not fruit in sufficiency, as suppliants from lords whose favour is ineffectual" (S. X, 14). These two instances come, it should be mentioned, in one of Āśvaghoṣa's more highly developed passages of Kāvya writing, in which, as in so many of these, coincidences with the later Kāvya can be traced.

However subtle they may be, similes of this kind from psychology to an observation of nature are handicapped in point of literary satisfaction by their inverse character. When you compare an animal's tail stuck in a bush to instincts of innate nobility, if it is not meant as a bad joke, and we may acquit Āśvaghoṣa of that intention, your mind is really running on the subtle and transcendent psychological process which a

chance fact of nature has suggested. As an illustrative simile one may say frankly that it is a bad one, and so used, lacks literary charm. It is more easy to appreciate the value of these introspective similes when the poet is illustrating not external objects from the mind, but one phase of consciousness and conduct from another.

In a passage modelled closely on the Rāmāyana the charioteer is appealing to the young Suddōdhana by all human ties to abandon his ascetic intentions and to return from the forest to the palace (B. VI, 31 ff). "Therefore reject not thine aged loving father, devoted to his son, as an atheist the true religion, and forget not thy second mother outworn in thy upbringing, as a thankless man a good deed, and abandon not thy lady, virtuous daughter of a noble house devoted to her lord, as a coward the worldly fortune in his hands, nor relinquish thy noble child Yasodhara, as a waster relinquishes his high good name." It is all perhaps a little tedious and mechanical in this sustained form, and yet there is a distinctive literary element in the blending of the double psychological theme, which, in Āśvaghōṣa's time was probably new to Sanskrit poetry (as distinct from philosophical writing).

The cardinal point in Āśvaghōṣa's psychology, especially in its ethical bearing, lies in that distinction between the self and senses, or between the mind and senses, which is the moral background of Kāvya poetry. Quasi-personification of the senses—the "enemies", the "steeds"—had become a commonplace of literary writing long before Āśvaghōṣa's time. It is Āśvaghōṣa, however, who creates out of this quasi-personification a deliberate and laboured system of psychological simile. We have seen one instance above, in which the five arrows of Māra, symbols themselves of the five senses, remain inert against the Buddha as the senses of a saint. In another passage, the ordered moral life of the individual becomes the picture of the well-ordered state. "As the king followed this course, his servants and citizens behaved likewise, even as the senses of a man in disciplined devotion with peace in his soul and mind at ease."

शमात्मके चेतसि विप्रसन्ने प्रयुक्तयोगस्य यथेन्द्रियाणि । B. II, 45.

And योगः here carries with it, no doubt, not only its primary sense of religious discipline but also the germ of the contrast between devotion to religion and devotion to the State, of asceticism and the royal life, elaborated, for instance, in the eighth Sarga of Kalidasa's Raghuvamsam. Similarly, the state of the five senses at different points of psychological experience is called on to illustrate the attitude of disciples to a teacher, the approach of the five beggar disciples to Buddha in asceticism and their subsequent desertion. The former thought takes a curious turn :—It is not the senses surrendering themselves

to the mind but the complete well-being of the successful worldly man, which points the comparison. "Five beggars desirous of being released saw him there and came near to him as sensual objects to a lord whose good works have won wealth and health" (B. XII, 89). And later on, they abandon him as the five elements leave the wise man on his release (B. XII, 111), पञ्चधातवः here meaning apparently the five sensual faculties. Not unconnected with the latter simile is that from the consciousness of dying. Says the man in the street, when the charioteer returns without the Suddhōdhana, "There is no desire in us to live without him as in bodily beings at the passing of the senses" (B. VIII, 12). In another passage life goes from the body as a departing guest. More definitely psychological is the transference of idea from the grief of a man's own dying to that of the Hedonist relapsed from Heaven on exhaustion of his merit (S. XI, 51).

It will be seen that, in most of these instances, it is not the mere conventional analogy but the appreciation of a conscious process of thought or feeling, which gives to these similes of Āśvaghoṣa, pedantic as they might seem, their peculiar vitality. What echoes may there be of the emotional and moral conflicts the philosopher-poet in Buddha's consolation to Saundarananda on parting from his wife? When Saundarananda is following the saintly life she will have no happiness in her home, as in the mind of a philosopher, pure and at peace, his purpose finds no pleasure in passion (S. XVIII, 60). There is the same sense of mental conflict in the simile from divorce for renunciation of passion. Saundarananda is tempted in the forest by sensual thoughts and abruptly cast aside the idea of passion that is a stumbling block to devotion as a wise man angered at heart puts aside a woman of loose conduct, howsoever dear (S. XVII, 8).

In a more conventional tone the sensual delights forced on Suddhōdhana recall the familiar temptation of the saint, "The prince was led by force to the grove filled with troops of women as a saint whose vows are fresh, fearful of stumbling-blocks is led to the palace of the lord of Alaka where lovely Apsaras dance" (B. III, 65). Kubera and Indra are after all, in Kāvya poetry, little more than symbols for earthly royalty. Āśvaghoṣa too, no doubt, had reluctantly attended a palace Nautch.

It is far from being the case with Āśvaghoṣa that interest in human affection is absorbed entirely by the theme of passion, but the quieter emotional experiences of ordinary friendship present fewer opportunities for the psychological simile. Ingratitude has been mentioned as a simile for desertion of the home. The purely conventional tag, "embracing his resolve as a friend" (B. XIII, 43) like the conventional personification of dharma need only be mentioned on the one hand as linking up Kāvya with the sententious, moralising, for instance, of Manu,

and on the other hand, as a parallel to the simple simile for external proximity which was the starting point in this article. More distinctive is the saying, "Friendship with bad company is as unstable as good fortune in the hands of a coward" (B. XI, 3) (another reminiscence of the passage on desertion of the family). But this is very different from the subjective analysis of one psychological experience with a view to heightening the value of another, which constitutes the special note of most of the similes quoted.

These notes on Āśvaghosa's use of the psychological simile may suggest something of the peculiar mentality with which this intellectual approached his enforced, if not, one suspects, wholly uncongenial task of inculcating doctrine through Kāvya. The self-expression in poetry of the philosopher-missionary gave the introspective thought a place in literary Sanskrit which, but for his agency, it might not have assumed. To complete this study it would be necessary on the one hand to derive the origin of this feature from the unliterary writing of the earlier Sanskrit philosophers and from the earlier form of literature in the epic, and on the other hand, to follow out its influence in the Kāvya of the classical period. It would probably prove to be not the least weighty of the touches given by Āśvaghosa towards shaping the course of Sanskrit poetry.

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The Language of Āśvaghoṣa's Sāundarananda-Kāvya

By SUKUMAR SEN

INTRODUCTORY

The text of the Sāundarananda, a poem in Sanskrit by Āśvaghoṣa, has been for the first time edited by Mahāmahōpādhyāya Haraprasāda Śāstri in the *Bibliotheca Indica* series and published in 1910. The discovery and publication of this poem, one of the most noteworthy specimens of Sanskrit kāvya literature, which was so long lost, forms a most valuable contribution enlarging the horizon of our knowledge of Sanskrit literature, for which we are indebted to the scholarship of this *doyen* among Sanskrit *savants* in India.

It is extremely fortunate that the text of the poem is preserved *in toto*, and in a much better condition than that of the Buddhacarita, the only other poem extant of Āśvaghoṣa (barring the dramatic fragments discovered in Chinese Turkistan).¹ As a piece of poetic composition the Sāundarananda by far excels the Buddhacarita² which was perhaps the earlier work. Though there exist no Chinese or Tibetan versions of the Sāundarananda, yet there is reason to believe that in India it was more widely read than the Buddhacarita.³ The popularity of an author or work can frequently be attested from the number of lines or verses which have passed into the speech and have become part of its treasury of proverbs and *bons mots*. Some of the verses of the Sāundarananda have passed into the stock of "good sayings" in Sanskrit *Belles Lettres*. Thus, part of the following verse :

*vacanēna haranti varṇanā
niśitēna praharanti cētasā |
madhu tiṣṭhati vāci yōsitām
hrdayē halāhalam mahad viṣam ||*

They with their words take away (the faculty of) speech, and with (such) sharp (weapons) they smite the hearts (of men); honey lies in the tongue of women, and deadly poison

¹ Edited by Professor Lüders under the title 'Bruchstücke Buddhistischer Dramen,' Berlin, 1911.

² The Buddhacarita of Āśvaghoṣa, E. B. Cowell, Oxford, 1893.

³ The Sāundarananda-Kāvya, editor's preface, pp. xx, xxi.

in their heart' [S. 18. 35]—occurs in Bhartṛhari's Vāirāgya-Śataka amplified with a conceit :

*madhu tiṣṭhati vāci yōṣitām
hṛdi halāhalam eva kēvalam |
ata eva nīpiyatē 'dharō
hrdayam mustibhir eva tādyaṭē ||*²

Even the great Kālidāsa has borrowed phrases and expressions from Aśvaghoṣa, which will be shown *infra*.

The language of the Sāundarananda, though not violating Pāṇini's grammar to any very great extent, is interesting, as it differs materially from the stereotyped classical Sanskrit of the Kāvya literature. It is, in fact, a link between the epic Sanskrit, as in the Mahābhārata, and the ordinary grammatical 'classical' Sanskrit.

From the formidable array of grammatical forms not in ordinary use, which remain only as grammatical curiosities (and scare-crows to the students of Sanskrit), one is tempted to think that the Sāundarananda (and also the Buddhacarita) was written by the poet as a text-book for teaching Sanskrit to his pupils. The following passages with their uncommon verbal forms remind one strongly of the Bhaṭṭikāvya: evidently it is Grammar and Belles Lettres both, which Aśvaghoṣa seeks to combine in its work.

¹ S=The Sāundarananda.

² This verse is the verse No. 3380 of the Subhāṣitāvalī where it is attributed to the joint authorship of Kālidāsa and Māgha. This confusion is due to the antiquity of the verse. Bhartṛhari's Nīti-śataka contains two verses which are ascribed to Bhadanta Aśvaghoṣa in the Subhāṣitāvalī. These are—

*kadanthitasāpī hi dhāiryavṛttir
na śakyate sattvaḥṣaṇṇaḥ pramārṣtum |
adhōmukhasyāpī kṛtasya vahnēr
nādhāḥ śikhā yāti kadācid eva ||*

'The placidity of temper of one who is patient of mood cannot be destroyed even when he is insulted; the flame of the fire which has been put face downwards does not proceed in a downward direction.' [No. 528 of the Subhāṣitāvalī=No. 227 of the Sārṅgadhara-paddhati.] This verse occurs in the Pañcatantra with the variant (b c), *buddhēr vināśo na hī-śaṅkunīyaḥ adhaḥkṛtasyāpī tanūnapātaḥ*.

*nādivākṛtīḥ phalati nāiva kulam na śīlam
vidyā sahasraguṇitā na ca vāguśuddhiḥ |
karmāni pūrvāśubhasaṅcayasāncitāni
kāle phalanti puruṣasya yathāiva vṛkṣāḥ ||*

'Neither the appearance, nor family, nor character, nor learning although a thousandfold in extent, nor again clearness in speech does bear fruit: only the deeds of a man with their accumulation of merit gathered up from yore bear fruit in time, even as trees.' [No. 96 of Telang's Edition=No. 3100 of the Subhāṣitāvalī.] Three other verses in the Subhāṣitāvalī [Nos. 198, 529, 3141] are ascribed to Aśvaghoṣa.

a v a r d h i ṣ ṭ a g u ṇ ā i ḥ ś a ś v a d
a v ṛ d h a n m i t r a ś a m p a d ā |
a v a r t i ṣ ṭ a c a v ṛ d d h ē ṣ u
n ā v ṛ t a d g a r h i t ē p a t h i || [2. 26].

‘[Śuddhōdana] perpetually increased in virtues, and prospered in the fortune of friendship: [he] attended the aged, [and] never trod in the path that was blamed.’

d ā n ā i r a j a s r ā i r v i p u l ā i ḥ s ō m a ṃ v i p r ā n a ś ū ś a v a t |
r ā j a d h a r m a s t h i t a t v ē c a k ā l a ṃ s a s y a m a ś ū ś a v a t ||

‘With incessant and bountiful gifts he caused Brahmins to press Sōma (i.e. hold the Soma sacrifice); through his adherence to kingly duties he would cause the harvests to be produced in [proper] time’ [2. 31].

s a r ā i r a ś i ś a m a c c h a t r ū n
g u ṇ ā i r b a n d h ū n a r ī r a m a t |
r a n d h r ā i r n ā c ū c u d a d b h ṛ t y ā n
k a r ā i ḥ n ā p ī p i d a t p r a j ā ḥ ||

‘He quelled his enemies with [his] arrows; with his virtues he captivated his friends; he never led his servants to difficulties; he never oppressed [his] subjects with taxes’ [2. 27].

r u r ō d a m a m l ā u v i r u r ā v a j a g l ā u
b a b h r ā m a t a ś h ā u v i l a l ā p a d a d h m ā u |
c a k ā r a r ō ṣ a m v i c a k ā r a m ā l y a m
c a k a r t a v ā ś t r a ṃ v i c a k a r ṣ a v a k t r a m ||

‘She wept, she became pale; she cried, she drooped; she wandered, she stood still; she mourned, she blew; she felt angry, she threw away the garland; she tore at the clothes, she scratched her face’ [6. 34].

ś r u t v ā t a t a ḥ ś a d - v r a t a m u t s i ṣ ṭ k ṣ u m
b h ā r y ā - d i d ṛ k ṣ u m b h a v a n a m v i v i k ṣ u m |
n a n d a m n i r ā n a n d a m a p ē t a d h ā i r y a m
a b h y ū j j i h i r ṣ u r m u n i r ā j u h ā v a ||

‘Then on hearing that Nanda, cheerless and devoid of patience [was] desirous of giving up the good vow, and wished to see [his] wife, and to enter [his] home, the sage wishing to rescue him, called [him]’ [10. 1].

Examples can be cited *ad infinitum*.

The poem, although didactic, by no means lacks in high poetic excellence. The style is easy and graceful. The poem is studded with beautiful similes. The following may be quoted as illustrative instances:

virējur harinā yatra suptā mēdhyāsu vēdiṣu |
salājāir mādhavīpuṣpāir upahārāḥ kṛtā iva ||

‘Where the deer looked beautiful, sleeping on the holy altars : together with *mādhavī* flowers and fried paddy—they looked as if they were offerings [on the altars]’ [1. 12].

sā hāsahamsā nayanadvirēphā
pīnastanābhyunnatapadmakoṣā |

‘She was swan-white in (the brightness of) her smile; she was bee-eyed (in the darkness of her glances); and her full breasts were like upstanding lotus buds’ [4. 4ab].

tasyā mukham tat satamālapatram
tāmrādhārōṣṭham cikurāyatākṣam |
raktādhikāgram patitadvirēpham
saśīvalam padmam ivābabhāsē ||

‘That face of hers, with *tamāla*-leaf decorations, with upper and lower lips both red, and with wide eyes extending to her sidelocks, looked beautiful like a lotus deep-red at the tip, with a (black)-bee resting in it, and having (dark) moss (at the edge)’ [4. 21].

viṣaṇṇavaktrā na rarāja cāśu
vivaraṇacandrēva himāgamē dyāuḥ ||

‘Like the sky in winter, its moon in pallor, pale of face, she too did not appear bright for a long time’ [6. 9cd].

lēkhāratham ādarsam ananyacittō
vibhūṣayantyā mama dhārāyivā |
bibharti sō ’nyasya janasya tañcēt
namō ’stu tasmāi calasūhrdāya ||

‘After having held the mirror in front of me (to enable me) to draw the (sandal paste) figures (on my cheeks) while adorning myself—his mind not being elsewhere all the while—should he be bearing the same mirror for some other person, I (only) make my humble bow to him of a fickle heart’ [6. 18].

sā cakravākiva bhṛsam cukūja
śyēnāgra-pakṣa-kṣata-cakravākā |
vispardhamānēva vimāna-samsthāiḥ
pārāvatāiḥ kūjana-lola-kañṭhāiḥ ||

‘She wailed, disconsolate like the female *cakravāka* duck whose mate’s wings have been injured by a hawk and rivalling, as it were, the pigeons seated on the terrace pavilion, their throat [emitting] sweet cooings’ [6. 30].

tābhir vṛtā harmya-talē ’nganābhiś
cintā-tanuḥ sā sutanur babhāsē |
śatahradābhiḥ parivēṣitēva
śaśāṅka-lēkhā śarad-abhra-madhyē ||

'She, with her slim figure emaciated with anxiety, and surrounded by those ladies on the floor of the palace, appeared like the thin crescent of the moon surrounded by lightning flashes in the midst of autumnal clouds' [6. 37].

*vahnāyatē tatra sitē hi śṛṅgē
samkṣipta-varhaḥ śayitō mayūraḥ |
bhūjē balasy āyata-pīna-bāhōr
vāidūrya-kṣyūra ivābabhāsē ||*

'There [in the Himalayas] upon the white peak the peacock roosting with its plumes gathered in looks like fire; the peacock looked beautiful, even as the beryl armlet on the arm of the long-and-stout-armed Balarāma' [10. 8].

*kāsāñ cid āsām vadanāni rējur
vanāntarēbhyāś cala-kundalāni |
vyāviddha-parṇēbhya ivākarēbhyaḥ
padmāni kādamba-vighaṭṭitāni ||*

'Through the recesses of the woods the faces of some of the ladies with their dangling earrings appeared beautiful, even as lotuses through the thick-leaved lotus plants swayed by grey swans' [10. 38].

These quotations would suffice to show that Āsvaghōṣa was a great poet, and that it reflects no discredit on the great Kālidāsa if he thought it better to develop some of the suggestive similes of Āsvaghōṣa.

It is admitted on all hands that Kālidāsa was posterior to Āsvaghōṣa. It requires no fresh proof to establish this, though thousand and one fresh ones can be given.¹

Kālidāsa was probably indebted to the Sāundarananda for the execution (not the *motif*) of the Kumārasambhava. It would require a separate paper to discuss the common features of these two poems. Some phrases and expressions from the Sāundarananda are given below, which are found unchanged in the works of Kālidāsa.

*kim atra citram yadi [vita-mōhō
vanam gataḥ svastha-manā na muhyēt] |*

'What is strange here, if he, once gone to the forest, rid of his infatuation and easy in mind, were not to yield again?' [16. 84].

Cf. *kim atra citram yadi [kāma-sūr bhūr
vṛttē sthitosyādhipatēḥ prajānām] |*

1. Mr. Kshetresachandra Chattopādhyāya in his learned paper on 'The Date of Kālidāsa,' reprinted from the Allahabad University Studies, vol. II, has tried to show, from the comparison of similar ideas from the works of the two poets, that Kālidāsa preceded Āsvaghōṣa; but from the very same comparisons one can easily deduce the converse proposition.

‘What is to be wondered at here if the earth give the desired objects to you who practise (all) the duties of the lord of men?’ [Raghuvamśa 5. 33].

[*pramādānām*] *agatir na vidyate*, ‘for women, there is no forbidden place, i.e. they are ever and everywhere irresistible’ [8. 44].

Cf. [*manōrathānām*] *agatir na vidyate*, ‘for the wishes of the heart there is nothing forbidden or unapproachable’ [Kumārasambhava 5. 64].

[*karnānukūlān avatamsakāmś ca*]
[*pratyarthibhūtān [iva kuṇḍalānām]* |

‘Flower decorations matching the ears, and defying, as it were, the earrings’ [10. 20].

Cf. [*pratyarthibhūtām [api tām samādhēḥ*
śuśrūṣamāṇām giriśo’ numēnē] |

‘Giriśa allowed her who was willing to serve [him], though [she was] an obstacle in his meditations’ [Kumārasambhava 1. 59].

[*...nanṛtus tathānyāḥ...*] *stana-bhinna-[hārā]* ‘some again danced about with their necklaces displaced from [their] breasts’ [10. 36].

Cf. [*cacāla bālā*] *stana-bhinna-[valkalā]*, ‘the girl moved [and her] bark garments [were] displaced from the breasts’ [Kumārasambhava 5. 84].

[*babhūva sa hi samvēgaḥ śrēyasas tasya vṛddhaye* |
dhātōr adhir ivākhyātē paṭhitō ’kṣara-cintakāiḥ ||]

‘That mental agitation of his served for the growth of (his) fortune; just as the prefix *adhi* is attached to the root (*i*) (to give a new root in the lists) by those who busy themselves with syllables (i.e., grammarians)’ [12. 9].

Cf. *dhātōḥ sthāna ivādēśam sugrīvam samnyavēśayat* ‘[Rāma] established Sugrīva [firmly] like the stem form in place of the root’ [Raghuvamśa 12. 58].¹

śrūta-mahatā [śramaṇeṇa] ‘by the *śramaṇa* of great learning’ [9. 50].

¹ It is remarkable that Aśvaghoṣa and Kālidāsa have given only two grammatical similes each. In addition to the above the others are:

natu kāmātmanas tasya kenacid jagrhe dhṛtiḥ |
triṣu kālēṣu sarvēṣu nipātō ’stir iva smṛtaḥ ||

‘Peace of mind could not in any way be attained by him as his soul was filled with passion: just as the verb *asti* as an indeclinable is fixed in its form in the three tenses.’ [12. 10].

Cf. *sō’bhavad varavadhū-samāgamaḥ prakṛti-pratyaya-yōga-sannibhaḥ* |
‘Then the union of the bridegroom and the bride appeared like the union of the stem and the affix’ [Raghuvamśa 11. 56].

Cf. Sukumar Sen, Indian Historical Quarterly, Vol. ii, p. 657 ff.

Cf. [sarasvatī] *śruta-mahatām [mahīyatām]* 'may the knowledge of the great learned be honoured' [Abhijñānaśakuntala, VIII].

[*sō 'niścayān*] *nāpi yayāu na tathāu*, 'owing to indecision he could neither move nor stay' [4. 42].

Cf. [*śāilādhīrājatanayā*] *na yayāu na tathāu*, 'the daughter of the king of mountains neither moved nor stayed' [Kumārasambhava 5. 85].

śaśāṅkalēkhā [śaradabhramadhyē] 'like the crescent moon under the autumnal clouds' [6. 37].

Cf. *śaśāṅka-lekhām iva pasyato divā*
sacētasah kasya manō na dūyatē ||

'Looking at her as at the crescent moon in day-time who is there with a heart whose mind does not ache?' [Kumārasambhava 5. 48].

[*katham kṛto 'siti jahāsa cōccāṅk*
mukhēna] śācīkṛta [-kuṇḍalēna] |

'She laughed aloud; "how have you done?"—her face awry, with its earrings.' [4. 19].

Cf. [*yathāvukāśam nināya*] *śācīkṛta [-cāruvaktraḥ]* |

'He passed the while, his handsome face turned sideways' [6. 14].

vātēritah pallavatāmrarāgaḥ
[puṣpōjjvala-śrīr iva karṇikārah] |

'Like unto the *karṇikāra* (tree), swayed by the breeze, red in hue with its twigs, charmingly bright with blossoms...' [18. 5].

Cf. *pracakramē pallavarāgatāmṛā*
prabhā pataṅgasya munēś ca dhēnuḥ |

'The cow of the sage and the rays of the sun, both red in hue like new leaves, began to move' [Raghuvamśa 2. 15];

and—*ēsō vādērida-pallava-ṅgulihim tuvarēdi via mam kēsararukkhaḥ*, 'this *keśara* tree urges me, as it were, with its finger-like moving shoots' [Abhijñānaśakuntala I].

The Bhagavadgītā must have been known to Āsvaghōṣa, as some of the verses in the Sāundarananda seem to be paraphrased from the Bhagavadgītā. Thus:

tataḥ smṛtim adhiṣṭhāya capalāni svabhāvataḥ |
indriyānindriyārthēbhyō nivārayitum arhasi ||

'Now since you have resorted to contemplation it is proper for you to check the naturally fickle senses from [enjoying] the objects of the senses' [13. 20].

Cf. *tasmād yasya mahābahō nigrhītāni sarvaśah* |
indriyānindriyārthēbhyas tasya prajñā pratīṣṭhitā ||

‘O long-armed one, of him, whose senses are completely restrained from [the enjoyment of] the objects of the senses, the knowledge is firmly grounded’ [Bhagavadgītā 2. 68]. Compare also Bhagavadgītā 2. 58.

*viṣayāir indriyagrāmō na trptim adhigacchati |
ajāsrām pūryamāṇō ’pi samudraḥ salilāir iva ||*

‘The senses do never attain satiety in the objects [of the senses], like the ocean though incessantly supplied with waters’ [13. 40].

*Cf. rāga dvēṣa vimuktāis tu viṣayān indriyāis’ caran |
ātma vāśyāir vidhēyātmā prasādam adhigacchati ||*

‘Employing the senses purged of attachment and abhorrence and under the control of the self, the self-controlled one attains peace’ [Bhagavadgītā 2. 64];

and—*āpūryamāṇam acalapratiṣṭham
samudram āpaḥ praviśanti yadvat |*

‘Just as the waters enter the ocean that is being filled up’ [Bhagavadgītā 2. 70].

THE LANGUAGE

As has been previously remarked the language of the Sāundarananda stands between the epic Sanskrit, as in the Mahābhārata, and the ‘classical’ Sanskrit of the grammarians. Except a very few stock words and phrases it has no affinities with Buddhistic Sanskrit. It has greater affinities with the epic Sanskrit.

Examples of forms and usages which do not ordinarily occur in classical (Paninian) Sanskrit alone have been quoted.

The text having been preserved in a much better condition, there occur much fewer anomalous forms in the Sāundarananda than in the Buddhacarita. Some of these again may be ascribed to the blunder of the scribes.

Some peculiar forms are noted below :

Nominal forms : *varṣa*, ‘shower’ [2. 53 etc.] used as neuter throughout, so also in B.¹; *māitrā* ‘friendship’ [8. 1], instead of *māitṛa*, or *māitrī*; *śravatīm* [accusative singular of the feminine of *śravant*, ‘oozing’; 8. 52] instead of *śravantīm*; *śrēṣṭhatama*,² ‘best, most exalted’ [18. 34], (this is found in the epics); *śraddadhānatā*, ‘faith’ [12. 30], occurring in the Manusamhitā 7. 86; cf. *śraddadhānavat*, ‘trustful’ [Vāmanapurāṇa].

Verbal forms : *grhya*, ‘having taken’ [1. 28], occurring in the epics, also in B.; *avāhi*, ‘know you’ [16. 14, 48] instead of *avēhi*; *avāitya*, ‘having perceived’ [16. 23], instead of *avētya*.

¹ B.=The Buddhacarita, edited by E. B. Cowell, Oxford, 1893.

² It occurs in the Vedic; also in Avesta. *srēstatama*.

1. THE NOUN : USE OF THE CASES

The use of the cases in S., is interesting as it has some very remarkable differences from that of classical Sanskrit. It is discussed below in some detail.

The Accusative

The cognate accusative is a characteristic feature of the Vedic language; but in classical Sanskrit it is of very rare occurrence. In S., as well as in B., the cognate accusative is found frequently, especially with verbs meaning 'to speak'. In this point the language of Āśvaghoṣa has some agreement with Buddhistic Sanskrit where however it is found to a far greater extent.

Examples: *tāpasās tēpirē tapaḥ*, 'the hermits practised penance' [1. 16]; *brahmacaryam cacāra saḥ*, 'he led the life of a religious student' [11. 4]; *dirgham ca niḥśvasya vacō bhyuvāca*, 'sighing heavily he uttered the speech' [4. 33]; *pramrjya cā śrūṇi vacāmsy uvāca*, 'wiping out the tears she uttered [these] words' [6. 38]; cf. *gambhīra-dhīrāṇi vacāmsy uvāca*, '[the sage] uttered [these] grave and calm words' [B. 1. 59]; *śramaṇaḥ.. vākyaṃ uvāca vipriyam*, 'the sage spoke the unpleasant word' [S. 22]; *kṛtāñjalir vākyaṃ uvāca nandaḥ*, 'Nanda, with folded palms, spoke the speech' [10. 49; 18. 39]; cf. *tanayam vākyaṃ uvāca śākyarājaḥ*, 'the king of the Śakyas spoke the word to the son' [B. 5. 36]; *sagadgadāṃ vākyaṃ idaṃ labhāḥ*, 'he uttered this speech chokingly' [5. 7]; *vānīm imāṃ ātmagatāṃ jagāda*, 'he muttered this speech to himself' [17. 62]; cf. *vānīm ca bhavyārthakarim uvāca*, 'he spoke the speech full of auspicious meaning' [B. 1. 34]; *giram ity uvāca*, 'he uttered this word' [6. 20, 10. 47; B. 7. 51, etc.]; *bhāikṣyam caran*, 'leading the life of a mendicant' [8. 59]; cf. *cacāra bhikṣām sa ca bhikṣu-varyah*, 'he, the best of the Bhikṣus, went abegging' [B. 10. 13].

The accusative with verbs: *vi-grah*: *pranātān anujagrāha vijagrāha kula-dviṣaḥ*, 'he was favourable to those who submitted [to him, but] fought with those who were enemies of [his] race' [2. 10].—*vi-graha* is generally construed with the instrumental, cf. *katham anēna sārḍham vighrahātum samarthah syāt*, 'how can he be able to fight with him?' [Pañcatantra]; *smṛ* regularly construed with the accusative of person (so also in B.); *abhi-car*: *yas tām priyō nābhycarat kadācit*, 'as [your] lover never did false by you' [6. 21]; *anu-dah*: *tām anudahyamānāḥ*, '[they] mourning with her' [6. 36]; *śrad-dhā*:¹ 'to believe' [in a peculiar sense]:

antar-bhūmi-gatam hyambhaḥ śraddadhāti narō yathā |
arhitvē sati yatnēna tadā khanati gām imān ||

¹ See under the Locative.

‘When a man believes [that there is] water underground, and if there is need he digs that ground carefully’ [12. 33]; *sasyōtpattim yadi na vā śraddadhyāt karsakāḥ kṣitāu*, ‘if the tiller do not believe in the raising of crop in the field’ [12. 35].

Verbal nouns ending in—*ā*, e.g., *prayiyāsā gṛham eva yēna mē*, ‘as my desire is for entering the house [8. 13]; and—*u* govern the accusative [2. 6, 64; 5. 13; 8. 7. etc.]; also the verbal noun ending in—*aka*: *yataś ca saṃskāragatam viviktam na kīrakāḥ kaścana vēdakō vā* ‘there is no doer or knower of intuitive actions’ [17. 20].

The accusative has once been governed with the adverb *anyatra*: *rāṣṭram anyatra balāir na sa kiñcid adīdat*, ‘he never cut anything except the kingdom with [his] forces’ [2. 33].

The ‘*upasarga*’ *prati* has been used with the accusative to denote various case-relations.¹ Thus—*munāu bruvāṇēna tu tatra dharmam dharmam prati jñātisu cādṛtēsu*, ‘though the sage [was] preaching *dharmā*, and [his] relations being attracted to the *dharmā*...’ [4. 1]; *nandah prayānam prati tatvarē ca*, ‘Nanda hastened for going out’ [4. 40]; *bhaktim sa buddham prati yām avōcat*, ‘the reverence which he professed for the Buddha’ [6. 17]; *vrddhyavṛddhyōr atha bhavēc cintā jñati-janam prati*, ‘there would be anxiety about the weal and the woe of [one’s] relatives’ [15. 30]; *sūryaḥ sa rambhām prati jāta-rāgaḥ*, ‘the sun, he had love for Rambhā’ [7. 26]; *rambhām prati sthūla-sirā mumūrcha*, ‘Sthūlaśiras was infatuated with Rambhā’ [7. 36]; *atha samrādhitō nandah śraddhām prati maharṣinā*, ‘now Nanda was drawn to faith by the great sage’ [13. 1]; *jaḡāma nāivōpaśamam priyām prati*, ‘he did not become cold towards [his] beloved’ [9. 1]; *gṛha-prayānam prati ca vyavasthitam śaśāsa nandam śramaṇaḥ sū śāntayē*, ‘the sage admonished Nanda who resolved to go home, for the peace [of his mind]’ [9. 4]; *evam-ādīḥ kramāḥ sūmya kāryō jāgarānam prati*, ‘such procedure, O gentle creature, should be adopted for keeping awake’ [14. 28]; *jahihi calam svargam prati rucim*, ‘give up the mind for the unstable heaven’ [11. 62].

In one instance the accusative has the sense of the causal instrumental or ablative, viz., *tadval lokē munir jātō lōkasyā nugrahām caran.. lōka-dharmāir na līpyatē*, ‘similarly a sage born in the world and living as a boon to it.. is not concerned with the duties and obligations of the society’ [13. 6].

The Instrumental

Cognate instrumental: *tataḥ kramāir dhīrghatamāiḥ prakramē*, ‘then he strode with biggest steps [4. 45]; *tayā ratyā bhīraṃsyasē*, ‘you shall enjoy—with that enjoyment’ [11. 35].

¹ So also in the Buddhacarita.

The instrumental with verbs: *pari-kṣip*, 'to throw, to sprinkle': *taḍ-āśramamalām yām tu paricikṣēpa cārinā*, 'that portion of the ground of the hermitage which he sprinkled with water.' [1. 13]; *sic* [2. 24]; *pari-sic* [5. 53; 10. 53]; *lip* [13. 4, 5. 6]; *krīd*: *yatnēna pravigāhya sāgarajalam ratnaśriyā krīḍati*, 'having plunged into the waters of the sea plays with the fortune of jewels' [16. 98]; *bhid*: 'to be separated': *svajanah svajanēna bhidyatē*, 'a kinsman has rupture with [his] kinsmen' [8. 33]; *vydh*: 'to grow, to prosper': *avardhiṣṭa guṇāḥ śaśvad aryadhan mitrasampadā*, 'he ever flourished in [his] virtues, and prospered with the fortune of friends' [2. 26]; *ram*: 'to rejoice': *tēnābhīrēmē tu gurōr mahimnā*, 'he rejoiced in that greatness of the master' [5. 4]; *ramatē* *trṣṭitō dhanasriyā ramatē kāmāsukhēna bālīṣaḥ ramatē praśamēna sajjanah*, 'the avaricious rejoices in the fortune of riches; the foolish rejoices in amorous pleasure; the good man rejoices in continence' [8. 26]; *saṁ-i*: 'to be united with': *tvam ābhīr niyatam saṁśyasi*, 'you shall ever be in their company' [10. 63]; *vi-spardh*: 'to rival with': *vispardhamānēva vimāna-saṁsthāḥ pārāvātāḥ kūjanalōla-kaṇ, thāḥ*, 'rivalling, as it were, with the pigeons seated on top floors, their throats sweet with cooing' [6. 30].

The verb *ram* is used periphrastically with *samam*, and *saha*: *dcāipayano dharmā-parāyaṇas ca rēmē samam kāśiṣu vēśa-vadhvā*, 'the virtuous Dvāipayana sported with a hetaera in the Kāśis' [7. 30]; *yadi kleśōtpādāḥ saha na ramatē śatru-bhīr iva*, 'if he does not find pleasure with the causes of pain as with enemies' [14. 52].

The instrumental with nouns—some of these are used periphrastically with *saman*, *sārdham* or *saha*: *artha* [12. 13]; *kārya* [11. 35]; *trpti* [5. 23]; *yuddha*: *kuruṣva yuddham saha tāvad indriyāḥ*, 'make battle with the senses' [9. 22].

The instrumental with adjectives and adverbs: *arthin* [12. 34, 35]; *varjjita* [8. 21]; *vinākṛta*, 'separated,' *priyayā*.. *vinākṛtaḥ*, 'divorced from his wife' [8. 20]¹; *vihīna* [14. 38]; *śūnya* [1. 38]; *sama* [5. 28]; *saṁēta* [4. 2]; *yuyutsu*, 'desirous of fighting': *kleśāribhīḥ..sārdham yuyutsuḥ*, 'wishing to fight with the enemies the pains' [17. 33]; *vinā* [8. 13]; *hīna* [7. 25, etc.].

The adverbial instrumental: *dhanavatsu caranti trṣṇayā dhanahīnēsu caranty avajñayā*, '[women] deal greedily with the rich, and slightly with the poor' [8. 40].

The Dative

The dative with verbs: in S. the verbs meaning 'to speak,' etc., are as a rule construed with the dative, and very rarely

¹ This idiom is found in the Mahābhārata and frequently in B., e.g., *divākarēnēva vinākṛtaṁ nabhaḥ*, 'like the sky bereft of the sun' [8.5.]; etc.

with the accusative. This a very old idiom which is but slightly preserved in the classical Sanskrit; the dative with verbs meaning 'to speak' began to be replaced by the accusative from the period of the Brāhmanas. Thus: *kath* [9. 51]; *gad* [8. 9, 10. 2]; *brū* [8. 11]; *bhās* [16. 68]; *vac* [5. 48; 8. 4]; *ni-vēday* [2. 19]; *śams* [5. 36]. With other verbs: *dā*, *vi-ruc*, *nam*,¹ *pra-nam*, *praṇāmam* *kr*, *klp*, *vrt*, *pra-vrt*, *dhā*, *namas as*, *spṛh* and *bhū*.

The dative with substantives and adjectives: *spṛhā*, 'desire': *tābhyah kim iti tē spṛhā*, 'why your desire for them?' [11. 31], cf. *na khalv iyaṃ svargasukhāya mē spṛhā*, 'this is not my desire for the heavenly pleasure' [B. 8. 66],—*spṛhā* is regularly construed with the locative in classical Sanskrit; *pratibhū*, 'guarantee': *apsaraḥ-prāptāyē yaṃ mē bhagavan prati-bhūr asi*, 'as you are O Lord, my guarantee for obtaining the celestial nymphs' [12. 13]; *utsuka*: *yasya kāmaraśajñāsya nāiṣkarmyāyōtsukam manah*, 'of him who is a knower of amorous pleasures the mind is eager for renunciation' [12. 21].²

Dativus commodi: *sa tē kam artham kurutē tvam vā tasmāi karōṣi kam*, 'what good does he do to you and what do you do to him?' [15. 40]; *rajas tathāsmāi munir ācarṣa*, 'so the sage drew *rajas* for him' [10. 42].

Dativus finalis occurs very frequently, and often elliptically: *śrāmyantō munayō yatra svargāya*, 'where the hermits practising austerities for the heaven...' [1. 17]; *yathēksukh.. dahanāya śuṣyate*, 'as sugar-cane is dried for being burnt' [9. 31]; *tasmāt kāmā na tṛptayē*, 'hence the [sensual] pleasures [are not conducive] to satiety' [11. 32]; *vīryam hi sarvavarddhayē*, 'prowess is for all prosperity' [16. 98]; *vijayāya tasthāu*, 'stood for victory' [17. 23];

yē mṛggyamānā dukkhāyā rakṣyamānā na śāntayē |
bhraṣṭāḥ śokāya mahatē prāptās ca na vīṛptayē ||

'[The pleasures], which being sought [cause] unhappiness, which being pursued [do] not [serve] for peace, which, when lost, [is a cause] for sorrow, and which, when attained, [do] not [conduce to] satiety' [15. 9].

Dativus causalis:

yōgācāras tathāhāram śarīrāya prayacchati |
kevalam kṣud-vighātārtham na rāgēṇa na bhaktayē ||

'*Yōgācāra* similarly allows food to the body only for quelling hunger, [and] not out of attachment or reverence' [14. 19]. This is very peculiar,—it might be due to *metrī causā* (*bhaktayē* instead of *bhaktiyā*).

¹ This verb also governs the locative, which is very peculiar: see *infra* under the locative.

² Pāṇini [2. 3. 44] prescribes only the locative and the instrumental.

The Ablative

vyath: *parēbhyō nāpi vivyathē*, 'he did not suffer from the enemies' [2. 2, cf. 12-22]; *vi-vyath*: *bhujagād ivānyaribhavad viviviyathē*, 'he recoiled from other's property as from a viper' [3. 31]; *śikṣ* [1. 13]; *sramṣ* [2. 25]; *abhi-gam*, 'to attain' [3. 27]; *saṃ-sru* 'hear' [5. 36]; *pari-rakṣ* [6. 47]; *cal* [7. 34]; *śam* [9. 35]; *āp* [10. 14]; *jan* [11. 52]; *bhū*: *pari-muc* [13. 51]; *vi-muc* [14. 44]; *pra-ert* [15. 6]; *saṃ-hṛ*, 'to collect' [15. 27]; *vi-sōdhay*, 'to purify' [15. 68]; *vāray*, 'to prohibit': *na dōṣatay paśyati yō hi dōṣam kaś tam tatō vārayitum samarthah*, 'who can restrain him from sin him who does not find sin in sin?' [16. 75].

The ablative with substantives: *riramṣā*, 'desire of abstaining': *riramṣā yadi tē tasmāt*, 'if you have a desire of abstaining from it' [11. 34]; *nirmumukṣā*, 'desire of emancipation': *duḥkhād yadi nirmumukṣā*, 'if there be the desire of escaping from pain' [16. 25]; *parāṇmukha*: *vanavāsasukhāt parāṇmukhah*, 'disinclined to the pleasure of dwelling in forest' [8. 13.] etc. The following example—*parēbhyah saṃsargam pariharati yaḥ kantakam iva*, 'who avoids others' company like the thorn' [14. 50]—is a contamination between *parēbhyah pariharati* and *parēna saṃsargam*.

The ablative is found with the adverbs *ite*, *vinā*, and *prabhṛti* [15. 59].

The ablative with a superlative formation: *tatō bhuṅkte tridāśapatirāṅgyād api sukhām*, 'then he enjoys the pleasure superior to that of the dominion of the lord of gods' [14. 52] etc., *hr̥cchayah j̥yēsthō rudrād api*, 'the god of love is greater than Rudra' [Mahābhārata 13. 85. 17=4031].

The ablative for the superlative genitive:

*śraddhā-dhanam śrēṣṭhatamam dhanēbhyah prajñārasas
tr̥ptikarō rasēbhyah ||
pradhānam adhyāmasukham sukhēbhyō 'vidyārati
duḥkhatamā ratibhyah ||*

'The wealth of faith is the best of all the wealths; the enjoyment of knowledge is [best] conducive to satiety, of all enjoyments; the spiritual happiness is the chief of all kinds of happiness; the pleasure of *avidyā* (false perspective) is the sorriest of all pleasures' [5. 24].

hitasya vaktā pravaraḥ suhr̥dbhyah etc., 'one who gives good advice is the best among friends' [5. 25].

In the following instance the adjective implying comparison is dropped: *paramahilā dahanatō 'pyamanyata*, 'he regarded [all] women other [than his wife] worse than fire' [3. 32].

Ablativus causalis occurs in 1. 41; etc.

Elliptic ablative: *mahāpaṇēbhyō vyavahārīṇasca mahāmūnau bhaktivaśāt praṇēmuk*, 'the merchants from big shops bowed to the great sage out of reverence' [5. 1].

with the accusative. This a very old idiom which is but slightly preserved in the classical Sanskrit; the dative with verbs meaning 'to speak' began to be replaced by the accusative from the period of the Brāhmanas. Thus: *kath* [9. 51]; *gad* [8. 9, 10. 2]; *brū* [8. 11]; *bhās* [16. 68]; *vac* [5. 48; 8. 4]; *ni-vēday* [2. 19]; *sams* [5. 36]. With other verbs: *dā*, *vi-ruc*, *nam*,¹ *pra-nam*, *prañāman* *kr*, *klp*, *vrt*, *pra-vrt*, *dhā*, *namas as*, *sprh* and *bhū*.

The dative with substantives and adjectives: *sprhā*, 'desire': *tābhyah kim iti tē sprhā*, 'why your desire for them?' [11. 31], cf. *na khalv iyaṃ svargasukhāya mē sprhā*, 'this is not my desire for the heavenly pleasure' [B. 8. 66].—*sprhā* is regularly construed with the locative in classical Sanskrit; *pratibhū*, 'guarantee': *apsarah-prāptāyē yan mē bhagavan prati-bhū asī*, 'as you are O Lord, my guarantee for obtaining the celestial nymphs' [12. 13]; *utsuka: yasya kāmaraśajñāsya nāṣkarmyāyōtsukam manah*, 'of him who is a knower of amorous pleasures the mind is eager for renunciation' [12. 21].²

Dativus commodi: *sa tē kam artham kurutē tvam vā tasmāi karōṣi kam*, 'what good does he do to you and what do you do to him?' [15. 40]; *rajas tathāsmāi munir ācakarṣa*, 'so the sage drew *rajas* for him' [10. 42].

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The ablative is found with the adverbs *ṛte*, *vinā*, and *prabhṛti* [15. 59].

The ablative with a superlative formation: *tato bhūṃkte tridaśapatirāṇyād api sukhām*, 'then he enjoys the pleasure superior to that of the dominion of the lord of gods' [14. 52]. cf., *hṛcchayah iyeṣṭhō rudrād api*, 'the god of love is greater than Rudra' [Mahābhārata 13. 85. 17=4031].

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Elliptic ablative: *mahāpaṇēbhyō vyavahārīnaśca mahāmunāu bhaktivaśāt praṇēmuh*, 'the merchants from big shops bowed to the great sage out of reverence' [5. 1].

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The dative with substantives and adjectives: *spṛhā*, 'desire': *tābhyah kim iti tē spṛhā*, 'why your desire for them?' [11. 31], cf. *na khalv iyam svargasukhāya mē spṛhā*, 'this is not my desire for the heavenly pleasure' [B. 8. 66],—*spṛhā* is regularly construed with the locative in classical Sanskrit; *pratibhū*, 'guarantee': *apsaraḥ-prāptayē yan mē bhagavan prati-bhūr asi*, 'as you are O Lord, my guarantee for obtaining the celestial nymphs' [12. 13]; *utsuka*: *yasya kāmaraśaṇāsya nāṣṭkarmyāyōtsukam manah*, 'of him who is a knower of amorous pleasures the mind is eager for renunciation' [12. 21].²

Dativus commodi: *sa tē kam artham kurutē tvam vā tasmāi karōṣi kam*, 'what good does he do to you and what do you do to him?' [15. 40]; *rajas tathāsmāi munir ācakarṣa*, 'so the sage drew *rajas* for him' [10. 42].

Dativus finalis occurs very frequently, and often elliptically: *śrāmyantō munayō yatra svargāya*, 'where the hermits practising austerities for the heaven...' [1. 17]; *yathēksuḥ . . dahanūya śuśyate*, 'as sugar-cane is dried for being burnt' [9. 31]; *tasmāt kāmā na trptayē*, 'hence the [sensual] pleasures [are not conducive] to satiety' [11. 32]; *vīryam hi sarvārddhayē*, 'prowess is for all prosperity' [16. 98]; *viṣayāya tasthāu*, 'stood for victory' [17. 23];

yē mṛgyamānā duḥkhāyā raksyamānā na śāntayē |
bhṛaṣṭāḥ śōkāya mahatē prāptāś ca na vitṛptayē ||

'[The pleasures], which being sought [cause] unhappiness, which being pursued [do] not [serve] for peace, which, when lost, [is a cause] for sorrow, and which, when attained, [do] not [conduce to] satiety' [15. 9].

Dativus causalis:

yōgācāras tathāhāram śarīrāya prayacchati |
kevalam kṣud-vighātārtham na rāgēṇa na bhaktayē ||

'Yōgācāra similarly allows food to the body only for quelling hunger, [and] not out of attachment or reverence' [14. 19]. This is very peculiar,—it might be due to *metrī causā* (*bhaktayē* instead of *bhaktiyā*).

¹ This verb also governs the locative, which is very peculiar: see *infra* under the locative.

² Pāṇini [2. 3. 44] prescribes only the locative and the instrumental.

The Ablative

vyath: *parēbhyō nāpi vivyathē*, 'he did not suffer from the enemies' [2. 2, cf. 12-22]; *vi-vyath*: *bhujagād ivānyavibhavād viviviyathē*, 'he recoiled from other's property as from a viper' [3. 31]; *śikṣ* [1. 13]; *sraṃs* [2. 25]; *abhi-gam*, 'to attain' [3. 27]; *saṃ-śru* 'hear' [5. 36]; *pari-raks* [6. 47]; *cal* [7. 34]; *saṃ* [9. 35]; *āp* [10. 14]; *jan* [11. 52]; *bhī*; *pari-muc* [13. 51]; *vi-muc* [14. 44]; *pra-vṛt* [15. 6]; *saṃ-hr*, 'to collect' [15. 27]; *vi-sōdhay*, 'to purify' [15. 68]; *vāray*, 'to prohibit': *na dōṣataḥ paśyati yō hi dōṣaṃ kaś tam tatō vārayitum samarthah*, 'who can restrain him from sin him who does not find sin in sin?' [16. 75].

The ablative with substantives: *riraṃsā*, 'desire of abstaining': *riraṃsā yadi tē tasmāt*, 'if you have a desire of abstaining from it' [11. 34]; *nirmumukṣā*, 'desire of emancipation': *duḥkhād yadi nirmumukṣā*, 'if there be the desire of escaping from pain' [16. 25]; *parāṇmukha*: *vanavāsasukhāt parāṇmukhaḥ*, 'disinclined to the pleasure of dwelling in forest' [8. 13.] etc. The following example—*parēbhyah samsargam pariharati yah kaṇṭakam iva*, 'who avoids others' company like the thorn' [14. 50]—is a contamination between *parēbhyah pariharati* and *parēṇa samsargam*.

The ablative is found with the adverbs *ṛte*, *vinā*, and *prabhṛti* [15. 59].

The ablative with a superlative formation: *tatō bhūṅktē tridaśapatirāṇyād api sukhāṃ*, 'then he enjoys the pleasure superior to that of the dominion of the lord of gods' [14. 52], cf., *hṛcchayah jyēsthō rudrād api*, 'the god of love is greater than Rudra' [Mahābhārata 13. 85. 17=4031].

The ablative for the superlative genitive:

*śraddhā-dhanam śrēṣṭhatamam dhanēbhyah prajñārasas
trptikarō rasēbhyah |
pradhānam adhyātmasukham sukhēbhyō 'vidyāratir
duḥkhatamā ratibhyah ||*

'The wealth of faith is the best of all the wealths; the enjoyment of knowledge is [best] conducive to satiety, of all enjoyments; the spiritual happiness is the chief of all kinds of happiness; the pleasure of *avidyā* (false perspective) is the sorriest of all pleasures' [5. 24].

hitasya vaktā pravaraḥ suhṛdbhyah etc., 'one who gives good advice is the best among friends' [5. 25].

In the following instance the adjective implying comparison is dropped: *paramahilā dahanatō 'pyamanyata*, 'he regarded [all] women other [than his wife] worse than fire' [3. 32].

Ablativus causalis occurs in 1. 41; etc.

Elliptic ablative: *mahāpaṇēbhyō vyavahārinasca mahāmunāu bhaktivaśāt praṇēmuh*, 'the merchants from big shops bowed to the great sage out of reverence' [5. 1].

The Genitive

The genitive with verbs: *anu-kr*, 'to imitate': *anucakrur vanasthasya dauṣmantēr dēvakarmanah*, 'they emulated the forest-dwelling son of Duṣmanta, of divine activity' [1. 36]; *vadhūr grhē sāpi tavānukurvati karisyate strīṣu virāgināḥ kathāḥ*, 'she, the daughter-in-law, emulating you, shall discourse on the topics of renunciation, among the ladies' [18. 59]; *adhi-i*, 'to study': *adhyāista yaḥ param brahma nādhyāista satatam dhṛtēḥ*, 'who contemplated the supreme Brahman, but did not always contemplate on restraint' [2. 12]; *prajñāmayam varma badhāna tasmān nāisyanti nighnasya hi śōkabānāḥ*, 'put on the mail of knowledge: whence the arrows of sorrow would not reach one who is low' [5. 30]; *śrad-dhā*: *nēcchanti yāḥ śōkam avāptum evam śraddhātum arhanti na tā narānām*, 'these [women] who do not wish to come by such sorrow should not believe in men' [6. 19]¹; *śru*, *tathāpi tām eva tadā sa cintayan na tasya śuśrāva*, 'still thinking of her he did not hear [him]' [9. 1]²; *rājyam kr*: *rājyam kṛtvāpi dēvānām papāta nahuṣō bhuvī*, 'though reigning over the gods Nahuṣa fell down upon the earth' [11. 44]³; *ruc*: *na marttēsu na dēvēṣu pravṛttir mama rōcatē*, 'living among men or gods does not appeal to me' [12. 14]⁴; *apa-kṛṣ*: *bhōjanam kṛtam atyalpam śarīrasyāpakarṣati*, 'food taken in very small quantity does harm to the body' [14. 4]; *brū*: *vi jānataḥ paśyata eva cāham bravīmi samyak kṣayam āsṛavānām*, 'I preach the destruction of the pains only to the knowing and the perceiving [man]' [16. 46]⁵.

The genitive used for *dativus commodi*:

lēkhārtham ādarśam ananyacittō vibhūṣayantyā mama dhārayitvā |
bibharti śō'nyasya janasya tañ cēt namō'stu tasmāi
cala-sāukṛdāya ||

'Having [previously], with all attention, held the mirror for toilet before me when I were dressing, if he [now] holds it before another person, a bow be to that one of fickle attachment' [6. 18].

The objective genitive: *sattvānām cānukampayā*, 'out of pity for the creatures' [2.55]⁶; *hitasya vaktā*, 'the speaker of

¹ The genitive here represents the Old Indo-Aryan (Vedic) dative.

² The genitive here may represent the accusative or the ablative; but it is very likely that the genitive is a possessive one, some such word as *vacanam* being suppressed.

³ This is an old Indo-Aryan idiom lost in Sanskrit, except—though very rarely—with the verb *īś*.

⁴ The genitive might represent the locative which is found in the classical Sanskrit, e.g. *bhaktyā gurāu mayyanukampayā ca* [Raghu].

⁵ The accusative with the agent noun in *tr* is not found in S.

⁶ The desiderative adjectives ending in *-u* regularly govern the accusative; the desiderative noun in *ā* has been construed with the

the good' [5. 25]; *śokasya hartā saraṇāgatānām*, 'the remover of sorrow of those that have taken refuge [in him]' [7. 5], cf. 1. 45; 7. 31; *diḍṛkṣayāksiptamanā munē tu*, 'he, whose mind was diverted, for desiring a sight of the sage' [4. 40]; *mahāughasyōttitīrsayā*, 'out of a desire of crossing the great flood' [14. 16; cf. 14. 17].

The subjective genitive with past participles in *-ta*: 6. 40; 9. 11.

The absolute genitive does not occur in S.

The Locative

The locative is a very living case in the Sāundarananda. The verbs which are construed with other oblique cases elsewhere are here construed with the locative. Moreover, it is used with a great number of substantives and adjectives in various case-ideas.

The locative with verbs: *vrt*: *avartīṣṭa ca vṛddhēsu nāvṛtat garhitē pathi*, 'he was under [the guidance of] the aged: he never took to the wrong path' [2. 26]; 3. 40; 9. 43; *pra-vrt*: *anukūlam pravartantē jñātisu jñātayō yadā*, 'when the kinsmen deal favourably with [their] kinsmen' [15. 37]; *pra-mad*: *kāmēṣv ajasram pramamāda nandah*, 'Nanda plunged deep in [sensual] pleasures' [2. 63]; *vi-mad*: *niśāvivāṣēsu cirād vimādyati*, 'for long one exults in nocturnal revelries' [9. 30]; *nam*:¹ *munayē nanāma sa gurāv iva*, 'he [the king] bowed to the sage, as if to the superior' [3. 27]; *pra-nam*:² *praṇamya ca gurāu mūṛddhnā*, 'bowing with the head to the superior' [12. 12]; *mahāmunaū bhaktivaśāt praṇēmuh*, 'bowed to the great sage out of reverence' [5. 1]; *sarvēṇa bhāvēna gurāu praṇamya*, 'with all feeling bowing to the superior' [17. 1]; *praṇāmam kṛ*: *kartum gamiṣyāmi gurāu praṇāmam*, 'I shall go to do homage to the master' [4. 32]; *jñā* (desiderative): *jijñāsamānā nāgēsu kausālam svāpadēsu ca*, 'seeking skill with the elephants and the [wild] animals' [1. 36]; *vi-smi*: *śrīprāptāu na viṣismiyē*, 'did not rejoice at finding fortune' [2. 2]; *vi-ni-yōjay*: *yasmād aham tvam viniyōjayāmi śivē śucāu vartmani vipriyē 'pi*, 'as I engage you in the auspicious and pure, though distasteful, path' [5. 46]; *car*: *viṣayēsu caran*, 'enjoying the objects' [14. 39];

guṇavatsu caranti bhartṛvat guṇahīnēsu caranti śatruvat |
dhanavatsu caranti tṛṣṇayā dhanahīnēsu caranty
avajñayā, ||

accusative only once, viz., *prayiyāsā gṛham ēva yēna mē*, 'because of my desire of going home' [8. 13].

¹ See under the dative, *supra*.

² The dative is an alternative idiom here; see *supra*.

‘[Women] play the master over the virtuous; they play the enemy over those who lack virtues; they deal thirstily with the rich; they deal spurningly with the poor’ [8. 40].

ram: *kugrḥē . ramatē*, ‘finds pleasure.. in a bad house’ [9. 37]¹; 6. 47; 9. 44, 45; 8. 12; *tvad-dharmē paramē ramē*, ‘I rejoice in the supreme *dharma* of yours’ [12. 16]; *śra-dhā*: *nārthi yady agninā na syāt chraddadhīyāt tu na vāranāu*, ‘one would not have believed in the fire-stick if he had no need of fire’ [12. 34]; *ā-śaṅk*: *ity evam-ādi priyaviprayuktā priyē nyad āśaṅkya ca sā jagāda*, ‘thus the lady separated from [her] husband, suspecting him for something else, spoke thus’ [6. 20]; *abhi-han*: *vajrēṇa hintāla ivābhijaghnē*, ‘smote like the thunder on a *hintāla* tree’ [7. 39]; *kr*: *vadhūr grḥē sāpi tavā nukurratī karisyatē strīṣu virāginīh kathāh*, ‘she, the daughter-in-law, too, emulating you, would talk to the ladies on the topics of renunciation’ [18. 59]; *vi-śvas*: *kas tasmin viśvasēt*, ‘who would believe in him?’ [15. 59]; *ghṛṇāya*, ‘to feel abhorrence’:

dr̥ṣtv āikam rūpam anyō hi rajyatē nyah pralr̥ṣyati |
kaścīd bhavati madhyasthas tatrāivā nyō ghṛṇāyātē ||

‘On seeing a form one is attracted, another is charmed; but another feels abhorrence in the very same’ [13. 52].

The locative with substantives²: *āruruksā*: *śivē katham tē pathi nāruruksā*: ‘why [you have] no desire of taking the auspicious road?’ [5. 40]; *didr̥ksā*: *didr̥ksāsyā munāu babhūva*, ‘he had desire for having a look at the sage’ [18. 2]; *asīt purastāt tvayi mē didr̥ksā*, ‘at first I had the desire of having a look at you’ [18. 33]; *pravivaksā*: *ata ēva ca mē viśēṣatah pravi-vaksā . tvayi*, ‘so [I have] a special desire of speaking to you’ [8. 11]; *vivaksita*: *atō ’sti bhūyas tvayi mē vivakṣitam*, ‘so [I have] a desire of speaking to you again’ [18. 53]; *saṅga*, ‘company’: *saṅgam eti janē janah*, ‘man finds company of man’ [15. 39]; *abhimāna*, ‘pride’: *balē ’bhimānas tava kēna hētunā*, ‘why this your pride of strength?’ [9. 7]; *balasthatā*: *balasthatām ātmani yēna manyasē*, ‘as you think of possessing strength in yourself’ [9. 6]; *pratiṣṇā*: *esyāmy anākyāna-viśē-ṣakāyam tvayiti krivā mayi tām pratiṣṇām*, ‘having made this promise to me, “I shall come back before your decorative paints are dried”’ [6. 13]; *mōgha-sāntva*: *taihā hi kṛtvā mayi mōgha-sāntvam*, ‘so giving me a bluff consolation’ [6. 16]; *śraddadhānatā*, ‘faith, trust’: *śrēyasi śraddadhānatā*, ‘faith in the good’ [12. 30]; *prasāda*: *bhūyah prasādam ca gurāv iṣyāya*, ‘became again well-disposed to the master’ [17. 30]; *munāu prasādam yadi tasya hi syāt*, ‘if he had been well-disposed to the

¹ The instrumental is an alternative idiom here; see *supra*.

² From the Old Indo-Aryan stage the locative with substantives was often an alternative idiom for the possessive genitive.

sage' [6. 17]; *balābala*: *balābalē cātmani sampradhārya kāryaḥ prayatnaḥ na tu tad-viruddhaḥ*, 'having realised (your) own strength and weakness, trial is to be made, and not its opposite' [16. 52]; *mūla*, 'source': *vīryam param kārya-kṛtāu hi mūlam*, 'prowess is the supreme source of a successful deed' [16. 94]; *apadeśa*, 'pretext': *bhaktim sa buddham prati yām avōcat tasya prayātum mayi sō 'padeśaḥ*, 'the reverence which he professed for the Buddha is only his pretext [shown] to me for going away' [6. 17]; *anuvṛtti*: *kva cānuvṛttir mayi sāsya pūrvam tyāgaḥ kva cāyam janavat kṣanēna*, 'where is that obeying me [as] of old and where is this escape like the [common] people' [6. 19]; *dōṣa*: *mā svāminam svāmini dōṣam āgāḥ*, 'do not ascribe to the master the offence [which are generally committed by] the husband' [6. 22]; *pravṛtti* 'news': *śrutvā tatō bhartari tām pravṛttīm*, 'then on hearing that news of [her] husband' [6. 24]; *śōka*: *rājarsi-vadhvās tava nānurvūpō dharmāsritē bhartari jātu śōkaḥ*, 'it is not meet for you, the wife of the royal sage, to mourn for the husband' [6. 39]; *rāga*, 'attachment': *tvayi yaś ca rāgaḥ*, 'that attachment for you' [6. 47]; *hitāisita*: *adhṛtāu yadī yam hitāisitā mayi tē syāt*, 'if you have good wishes for me in [my] disconsolateness' [8. 10]; *hrdaya*: *katham arhati tāsu paṇḍitō hrdayam sañjāyitum calātmasu*, 'how can the wise care to win the heart of the fickle-minded?' [8. 46]; *icchā*: *tathā tathēcchā viśayēsu vardhatē*, 'so and so does increase the desire for the objects [of the senses]' [9. 43]; *dhṛti*: *parām dhṛtim parama-munāu cakāra saḥ*, 'he had supreme reliance on the great sage' [10. 64].

The locative with adjectives: *śrānta*: *babhūva tapasi śrāntaḥ kākṣivāniva gōtamaḥ*, 'he became hard-worked in austerities like Gōtama, Kākṣivant' [1. 1]; *tasthivāms*: *tasthusaḥ ṣatsu karmasu*, 'of him practising the six practices' [1. 44]; *sthita*: *sthitāḥ kārtayugē dharmē*, 'practising the dharma of the *kṛta* age' [2. 25]; *akutūhala*: *viśayēsv akutūhalaḥ*, 'indifferent to the objects [of the senses]' [2. 25]; *anukampaka*: *ity evam uktāḥ sa tathāgatēna sarvēsu bhūtēsv anumakampakēna*, 'he being thus told by the Tathāgata who sympathised with all beings' [5. 33]; *samartha*: *yāvad vayo yōgavidhāu samartham buddhim kuru śrēyasi tāvad eva*, 'as long as the age is capable of the practices of *yōga*, so long do you make up your mind for [acquiring] the good' [5. 49]; *vācya*: *nikhilēna ca satyam ucyatām yadī vācyam mayi sāmūya manyasē*, 'do speak the entire truth, if you, O child, think it [proper] to communicate to me' [8. 6]; *satṛṣṇa*: *kāmēsu hi satṛṣṇasya na śāntir upapadyatē*, 'peace does not come to him who is athirst of sensual pleasures' [11. 37]; *āgata*: *ātmani duḥkham āgatam*, 'pain [that has] come to oneself' [9. 41]; *kuśala*: *kāma-caryāsu kuśalaḥ*, 'experienced in amorous activities' [11. 4]; *viklava*: *bhiksucaryāsu viklavaḥ*, 'averse to the duties of a *bhikṣu*' [11. 4]; *jāta*: *yaj jñātvā tvayi jātām mē hāsyam kārūnyam*

eva ca, 'knowing which my laughter and pity have been excited for you' [11. 23]; *atrpta*: *trptir nāstindhanāir agnēh.. nāpi* | *kāmēṣv atrptasya*, 'fire has no satiety with fuels.. nor of one unsatiated with sensual pleasures' [11. 32].

Note the following example:

*adadatsu bhavanti narmadāḥ pradadatsu pravisanti
vibhramam |
pranātēṣu bhavanti garvitāḥ pramadās trptalarās ca
kāmīṣu ||*

'Women become entertaining to those who do not pay; they adopt coquetry towards those who pay; they become haughty towards those who submit to them; and they become very satisfied with the amorous' [8. 39].

The causal locative: *tad-vṛddhāu vardhatē dharmō mūla-vṛddhāu yathā drumaḥ*, 'the *dharma* thrives with the thriving of faith, just as a tree thrives with the growth of its roots' [12. 41].

2. COMPOUND FORMS

The compounds in S., rarely exceed four component words. The following compounds are peculiar: *vēda-vēdāṅga-vidvāms-*, 'versed-in-the-vedas-and-the-supplementary-vedic-literature' [1. 44]; *bhāryā-dīrksu*¹, 'desirous-of-seeing-the-wife' [10. 1]; *yatrēccha* (adverbial compound), 'at-will-where': *yathēccham yatrēccham samayati manah prērayati ca*, 'howsoever and wheresoever at will he can check or direct his mind' [15. 69]; *alamvidya-*, 'well-educated' [1. 48]; *alam-vīrya*, 'very heroic' [1. 55].

3. THE VERB

One of the most striking characteristics of the style of Aśvaghoṣa is the excessive use of finite verbs.- This is a great contrast with the style of the classical poets not excluding Kālidāsa.

The Tenses

The perfect is the regular tense for denoting the past. It occurs 460 times, and with 108 verbs. The aorist occurs 118 times, and with 61 verbs. The imperfect occurs with 19 verbs and 38 times. The ratio between the perfect and the aorist is a little less than 4: 1, between the aorist and the imperfect about 3: 1. In the Buddhacarita, however, the ratio between the perfect and the aorist is about 19: 1.

The periphrastic future occurs only once, viz., *kartāsmi*

¹ Notwithstanding the absence of Pāṇini's sanction for such a compound, we do find such compounds in classical Sanskrit, e.g., *arthalīpsu* 'desirous-of-getting-money' [Pāṇicatantra], etc.

sarvam bhagavan vacas tē, 'I shall do, O Lord, all that you say' [5. 50].

The Moods

The optative is used for the conditional here :

tām suṇḍarīm cēn na labhēta nandaḥ
sā vā niṣēvēta na taṁ natabhrūḥ |
dvandvam dhruvam tad vikalam na sobhētā-
nyō-' nyāhīnāv iva rāti-candrāu ||

'If Nanda had not married that beautiful lady, and if that arch-browed girl had not served him, then certainly the couple, separated, would not have looked fine like the night and the moon bereft of each other' [4. 7].

In the following verse the optative denotes the past tense :

sā tēna cēṣṭālatitēna bhartuḥ
śāthyēna cāntarmanasā jāhāsa |
bhavēc ca ruṣṭā kila nāma tasmāi
lalātajihmām bhrukutīm cakāra ||

'She laughed within herself at that graceful misbehaviour of her husband : she feigned to be angry with him, and accordingly, made a frown twitching the forehead' [4. 15].

The passive imperative is found in 8. 4, 6; 13. 22, etc.

The conditional occurs only once: *hatō' bhaviṣyam yadi na vyamōkṣam*, 'I would have perished if I had not attained the spiritual release' [18. 41].

The Participle

The perfect participle is used both as an adjective as well as a finite verb. Thus (i) as adjective: *śōkēna cōnmādam upēyivāmsō rājarsayō 'nyē 'py avaśā vicēluḥ*, 'even royal sages, having attained madness owing to sorrow, have lost their balance of mind' [5. 29], cf. 3. 22; (ii) as finite verb: *akrīārthō na dadṛṣē yō' sya darśanam iyivān*, 'no one who ever saw him did look unsatisfied' [2. 8]; *yam ēkabāṇēna nijaghnivān* (sic) *jarā*, 'whom old age smote with a single shaft' [9. 18]; *sunētraḥ punarāvṛttō garbhavāsam upēyivān*, 'Sunetra again came to reside in the womb (i.e., was born again)' [11. 57]; *bhṛṣam samvēgam iyivān*, 'was very much perturbed at heart' [12. 4].

The past participles are generally used with a finite verb meaning 'to be': *katham kṛtō si*, 'how could you do it?' [7. 18];

dvāipāyanō dharmapṛāyaṇas ca
rēmē samam kāsiṣu vēsavadhvā |
yayā hatō 'bhūc calanūpurēna
pādēna vidyullatayēva mēghaḥ ||

‘Dvāipāyana, though a spiritual man, enjoyed a *hetaera* at the Kāśis; and by whom he was killed with her foot adorned with the jingling anklets like a cloud smitten with the streak of lightning’ [7. 30]; 9. 9, 16; 14. 45; 17. 66; *punar api cāsmi sannatas tam*, ‘I again bow to him’ [17. 73]. Sometimes the finite verb is not used: *aham hi daṣṭô hṛdi manmathâhinâ*, ‘I am really bitten at heart by the Love-serpent’ [10. 55]; *gurur grham nô bhagavân pravistâh*, ‘our lord the master has entered the house’ [4. 30].

In the *Sāundarananda* not a single instance occurs where the present participle [the possessive past participle ending in *-ta-vant*]. It is either used as an attributive adjective, or as a predicative adjective with a finite form of the root *as*. Thus:

śyēnāya prānivātsalyāt sva-māmsāny api dattavān |
śiviḥ svargāt paribhṛstas tvādyk kṛtvāpi duṣkaram ||

‘Śivi, who gave his own flesh to the Śyēna out of mercy to the creatures, and having done such a feat, was ejected from the heaven’ [11. 42]; cf. *prāptavān* in 11. 60; *viśayāms, tyaktavān asi*, ‘you have given up the [enjoyment of the] objects’ [11. 27]; *yady api pratisamkhyānāt kāmān utsṛṣṭavān asi*, ‘as you have given up sensual pleasures for the sake of contemplation’ [15. 4].

The Conjunctive

The conjunctive has sometimes been used ungrammatically (i.e. not having the same subject as the finite verb as prescribed by Pāṇini), as is found in the Great Epic as well as in late classical Sanskrit.¹ Thus: *jñātims ca drṣtvī vratinô grhasthān samvin na cittē ’sti na vāsti cētaḥ*, ‘seeing (your) kinsmen as religious mendicants, who were formerly house-holders, does it not provoke your thought?—or, have you no heart?’ [5. 37]; *bhūyāḥ samālōkya grhēsu dōṣān niśāmya tat tyāgakṛtam ca dharma | nāivāsti bhōktum matir ālayam tē*, ‘having repeatedly noticed and found fault with the home life, and having learnt that *dharma* of renunciation, you have no desire of enjoying comforts at home’ [5. 39];

śrutvā hyāvartakam svargam saṃsārasya ca citratām |
na martyṣu na dēvṣu pravṛttir mama rocatē ||

‘After hearing the impermanence of heaven and the instability of the world, I have no inclination for either men or for gods’ [12. 14];

dōṣavyālān atikramya vyālān grhagatān iva |
kṣāmaṃ prājñāsya na svaptum nistitṛṣor mahad bhayam ||

¹ The *Buddhacarita* too abounds in such ungrammatically used conjunctives.

'Disregarding the defects that are like ferocious animals that are at home, it is not meet to sleep for the wise one who is desirous of escaping a great fear' [14. 29];

kāyasya kṛtvā hi vivēkam ādāu sukhō 'dhigantum manasō vivēkaḥ, 'having at first attained physical indifference, it is easy to come to mental indifference' [14. 46].

The conjunctive used absolutely with *kim*¹: *kim indriyā-nām upagamyā dāsyam*, 'what is the good of serving the senses?' [5. 25]; *kim indriyārthhārtham anartham ūdhvā*, 'what is the good of carrying misfortune for the sake of the objects of the senses?' [5. 26].

The Infinitive

The infinitive has been faultily used in: *sukhō 'dhigantum manasō vivēkaḥ*, 'it is easy to attain mental aloofness' [14. 46]; *tasya prayātum mayi sō 'padēśaḥ*, 'that is a plea (offered) to me for his leaving (me)' [6. 17].

4. THE VOCABULARY

The most striking feature of the vocabulary of Āśvaghoṣa is his excessive use of the desiderative formations. The following desideratives occur in S.,—

Substantives: *ditsā*, 'desire of giving' [2. 5]; *bubhutsā*, 'desire of knowing' [3. 6]; *jigīṣā*, 'desire of winning' [5. 32]; *anujighṛksā*, 'desire of doing a favour' [3. 15]; *anujighṛksutā*, the same [18. 47]; *vininīṣā*, 'desire of training' [3. 21]; *didṛksā*, 'desire of seeing' [4. 40; 18. 2, 33]; *ārurukṣā*, 'desire of mounting' [5. 40]; *pravivakṣā*, 'desire of speaking' [8. 11]; *vivakṣā*, the same [11. 18]; *prayiyāsā*, 'desire of going' [8. 13]; *jighāṃsā*, 'desire of slaying' [11. 18]; *titādayiṣā*, 'desire of driving out' [11. 25]; *īpsā*, 'desire of getting' [11. 28]; *lipsā*, 'desire of gaining' [11. 26]; *riramsā*, 'desire of abstaining' [11. 34]; *tītīrṣā*, 'desire of fording' [14. 17]; *uttītīrṣā*, the same [14. 16]; *nirmumukṣā*, 'desire of escaping' [16. 25]; *cikīrṣita*, 'desire of doing' [8. 9].

Adjectives: *yiyāsu*, 'desirous of going' [2. 6, etc.]; *didṛkṣu*, 'desirous of seeing' [2. 46, etc.]; *śiṣayīsu*, 'desirous of lying on' [3. 22]; *vivakṣu*, 'desirous of speaking' [4. 29, etc.]; *nirmumukṣu*, 'desirous of emancipation' [5. 5]; *mumūrṣu*, 'desirous of dying' [5. 39]; *ujjihīrṣu*, 'desirous of taking out' [5. 47, etc.]; *jījīviṣu*, 'desirous of living' [6. 23]; *pravivakṣu*, 'desirous of saying' [8. 7]; *pravivikṣu*, 'desirous of entering' [8. 16, etc.]; *utsisṛkṣu*, 'desirous of giving up'; *vivikṣu*, 'desirous of entering'; *abhyujjihīrṣu*, 'desirous of rescuing' [10. 1]; *pipāsu*, 'desirous of drinking' [10. 11, etc.]; *jighāṃsu*, 'desirous of destroying'

¹ Cf. Pāṇini's aphorism, *alamkhalvōḥ pratiṣēdhayōḥ prācāṇ ktā* [3. 4. 18].

[10. 43, etc.]; *didhaksu*, 'desirous of burning' [10. 53]; *mumuksu*, 'desirous of escaping' [14. 11, etc.]; *pipatisu*, 'desirous of falling' [14. 15]; *nistitirsu*, 'desirous of escaping' [14. 29]; *jijāgarisu*, 'desirous of keeping awake' [14. 24]; *cikirsu*, 'desirous of doing' [17. 5]; *yuyutsu*, 'desirous of fighting' [17. 23]; *jigīṣu*, 'desirous of victory' [17. 56]; *vimumukṣu*, 'desirous of escaping' [18. 13]; *vivatsu*, 'desirous of dwelling' [1. 18].

Finite Verbs: *pravivikṣati*, 'he wishes to enter' [8. 15]; *tītṛṣati*, 'he wishes to cross over or escape' [8. 17]; *jighrṣati*, 'he wishes to take' [8. 18]; *tītṛṣēt*, 'should cross over' [9. 10]; *abhilipsasē*, 'you desire to get' [10. 63]; *cikrīṣanti* (sic), 'they wish to buy' [11. 26]; *cikitsayēt*, 'he should wish to cure' [13. 55].

Conjunctives and participles: *cikitsayitvā*, see *supra* [4. 14]; *jighrṣant*, see *supra* [5. 5]; *ujjihīrṣant*, see *supra* [5. 18]; *jihīrṣant* [5. 34, etc.]; *anīpsamānā*, 'not desirous of getting' [6. 6]; *īpsant* [6. 23]; *īpsita* [9. 41]; *dīṣant*, 'desirous of giving' [10. 10]; *mumūṣant* [11. 51]; *cikīrṣita*, 'desired' [12. 26]; *jigīṣant*, see *supra* [16. 85]; *cikīrṣant*, see *supra* [17. 5]; *vivakṣita*, 'desired to be spoken' [18. 53].

Adnominal verbs

karuṇāyamāna, 'feeling pity' [5. 21; [this word occurs twice in B., and no other adnominal verb occurs there]; *vahnāyatē*, 'it resembles a big fire' [10. 8]; *rājāyatē*, 'he behaves like a king' [10. 26]; *mandāyamāna*, 'getting dull' [16. 56]; *ghrṇāyatē*, 'feels abhorrence' [13. 52].

The only intensive is—*caṅkramyasva*, 'walk on and on' [14. 25].

In S. as well as in B. the regular name of the Himalayas is the old word *himavant*, and only once, *himagiri*. The late form *himālaya* which occurs in the Kumāra-sambhava of Kālidāsa does not occur in the works of Aśvaghoṣa.

The following are the rare and peculiar words that occur in the Sāundarananda: *arharūpa*, 'deserving' [1. 20]; *tarsa*, 'thirst, longing' [2. 19, etc.]; *kathamkathā*, 'anxiety' [2. 32; 3. 39]; *akathamkatha*, 'not anxious' [17. 27]; *lādita*, *lādant*, 'beautiful' [4. 27, 22, 40; 6. 43, etc.]; *vinākṛta*, 'separated' [8. 20]; *śraddadhāntā*, 'faith' [12. 30]; *cāukṣa*, 'fine, clever' [13. 16]; *nandī*, 'pleasure, happiness' [16. 44, 45]; *kaṇva*, 'sin' [16. 76]; *vibhī*, 'afraid' [17. 61].

REPETITIONS

In the Sāundarananda the same phrases and idioms often occur repeatedly. These are the repetitions:

mukhēna śācīkṛtakundalēna, 'with the face having the earrings awry' [4. 19]; *mukhēna tiryāṇ-natakundalēna*, 'with the face having the earring bent sideways and downwards' [6. 2].

ivābabhāṣē, '(it) appeared like..' [5. 52, 53; 10. 8; 17. 61].

gīram ity uvāca, 'uttered this speech' [6. 20; 10. 47].

yayus ca yāsyanti ca yānti cāiva, 'they did go (in the past), shall go (in the future), and they go (even now)' [5. 43]; *cakruḥ karisyanti ca kurvātē ca*, 'they did do, they shall do, they do (even now)' [7. 13]; *cērus carisyanti caranti cāiva*, 'they did, shall do, and (even now) do practise [austerities]' [7. 13].

vilalāpa tat-tat 'she wailed so and so' [6. 12; 7. 12].

kṛtāñjalir vākyam uvāca nandaḥ, 'Nanda spoke with his palms folded' [10. 49; 18. 39].

na cātra citram yadi, 'there is nothing strange here if..' [9. 3]; *kim atra citram yadi*, 'what is strange here if..' [16. 84].

rājēva lakṣmīm ajitām jigīṣuh, 'like a king wishing to win the fortune not yet won' [16. 85]; *rājēva dēśam ajitāñ jigīṣan*, 'like a king wishing to conquer the country hitherto unconquered' [17. 56].

madanāikakārya, 'solely addicted to the pleasures of love' [4. 1; 10. 35].

THE RHYMED VERSE

It is an interesting fact to note that the rhymed verse occurs in S. The earliest occurrence of the rhymed verse is to be found in the Mahābhārata and also in the Rāmāyaṇa. In late classical Sanskrit we find such verses very occasionally, as in the verses ascribed to Ghatakarpara. Rhymed verses written in Apabhraṃśa are to be found in the interpolated verses in Kālidāsa's Vikramōrvaśī.

These are the rhymed verses and half-verses that occur in the Sāundarananda :

sā rōdanārōṣitaraktadr̥ṣṭiḥ
santāpāsamṁkṣōbhilagātrayastīḥ |
papāta śīrnākulakārayastīḥ
phalātibhārād iva cūtayastīḥ ||

'Her eyes slightly reddened with weeping, her slim body surging with sorrow, her necklace disturbed, she a slight figure, fell down like a mango tree under the excessive load of its fruits' [6. 25].

darīcarīṇām atisundarīṇām
manōharaśrōṇī-kucōdarīṇām |
vṛndāni rējur diśi kinnarīṇām
puṣpōtkirāṇām iva vallarīṇām ||

'The groups of Kinnaris who dwell in caves, who are exceedingly beautiful, who have lovely hips, breasts, and waists, appeared charming like creepers that have put on blossoms' [10. 13].

*iāu dēvadārūttamagandhavantam
 nādīsarajprasaravanāughavantam |
 ājagmatuḥ kañcana dhātumantam
 devaṣṣimantam himavantam āsu ||*

‘They two came to a certain part of the Himalayas, that was sweetly perfumed with the Deodar trees, that contained rivers, lakes, and springs, that was full of metal ores, and that was inhabited by the gods and sages’ [10. 5].

The last line of this verse does not rhyme. Perhaps metrical difficulty was on the way.

*sa duḥkha-jālān mahatō mumukṣur
 vimōkṣamārgādhigamē vivikṣuḥ |
 panthānam āryam paramam didṛkṣuḥ
 samam yayāu kiñcid upāttacakṣuḥ ||*

‘He who was desirous of escaping from the great net of pain, of entering into the way to emancipation, and of finding the supreme path of righteousness, became somewhat calm, endowed as he was with (spiritual) insight’ [17. 13].

*sadvṛttavarmā kila sōmavarmā
 cacāla cittōdbhavabhinnadharmā |*

‘Somavarman, his good deeds being his armour, roamed about, his piety being (after all) shattered by love that grows in the heart’ [7. 42].

*calatkadambē himavannitambē
 tarāu pralambē camarô lalambē |*

‘On the slopes of the Himalayas, where the *kadamba* flowers quivered, on the dangling branches of the tree, the yak wandered about’ [10. 11].

The rhymed verse occurs also in B. [1. 14, 15 ; 2. 40 ; 4. 27, 30 ; etc.].

THE METRE

Metrical defects are to be found in 4. 7 *cd* and 7. 37 *cd*, where *c* does not end in a word but carries the last syllable to the next foot.

The verses in the *Sāundarananda* number 1.063. Fifteen metres have been used in the poem. These are as follow :

(i) *Samavṛtta*

Śloka [8 syllables]—384 verses,

Upajāti [11]—459 verses,

Vamśastha [12]—78 verses,

Praharṣinī [13]—4 verses,

Rucirā [13]—1 verse,

Vasantatilaka [14]—10 verses,

A new metre [14]—2 verses (see *infra*),

- Śikharinī [17]—10 verses,
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 (ii) *Arddhasamavṛtta*
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 Sundarī—57 verses.
 (iii) *Viṣamavṛtta*—44 verses.

The metre Mandākrāntā does not occur in S., nor in B. nor in the dramatic fragments ascribed to Aśvaghoṣa. It seems exceedingly likely that Kālidāsa was the originator of the Mandākrāntā metre. The earliest occurrence of this metre is found in the posthumous Allahabad pillar inscription of Samudragupta. Hariṣēna, the author of this inscription, might have been a contemporary of Kālidāsa. That Kālidāsa did not know this inscription can be argued from the fact that he did not use this metre either in the *Rtusamhāra* or in the *Kumārasambhava*. Had he known this inscription, and for the matter of that the metre Mandākrāntā, it could be expected of him to have used this—one of the most majestic of metres in Sanskrit—at least in the *Kumārasambhava* which bears all the impress of careful work in which the poet sought to give his vent. It is possible that Kālidāsa invented it when writing the *Mālavikāgnimitra*, as the Mandākrāntā verses occurring there are not very smooth and have the impress of a halting first attempt. It became gradually smoother and freer, successively in the *Vikramōrvaśī*, the *Abhijñānaśakuntala*, the *Raghuvamśa*, and probably finally in the *Meghadūta*.

In the *Sāundarananda* are found two metres which have the cadence of the Mandākrāntā, and which therefore might in all likelihood have suggested the metre to Kālidāsa: the priority in date of Aśvaghoṣa to Kālidāsa, and the latter having read, and having been influenced by the former should be considered. These metres are as follow:

[i] The verse 7. 52 [the metre of this verse has been named Kusumitalatāvellita in the *Chandōmañjarī* of Gaṅgādāsaśūri²

1 The verse is this:

— ◡ — ◡ — ◡ — ◡ — ◡ — ◡ — ◡ — ◡ —
kāmabhōgabhōgavadbhīr ātmadr̥ṣṭidr̥ṣṭibhīḥ
 ◡ — ◡ — ◡ — ◡ — ◡ — ◡ — ◡ — ◡ —
pramādanāḍikamūrdhabhīḥ praharsalōlajihvakāḥ |
indriyōragāḥ manōvilāśrayāḥ sprhāvīṣāḥ
śamāgamād r̥ṣe na daṣyam api yac cikīṣayē || [13.55].

Lines a and c are Tūṇaka lines; cf. editor's note, pp. 135, 136.

² Edited by Rāmatārāṇa Śirōmaṇi, Calcutta, 1909, p. 69.

*iāu dēvadārūttamagandhavantam
nadīsarāhprasravanāughavantam |
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‘They two came to a certain part of the Himalayas, that was sweetly perfumed with the Deodar trees, that contained rivers, lakes, and springs, that was full of metal ores, and that was inhabited by the gods and sages’ [10. 5].

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² Edited by Rāmatārāṇa Śirōmaṇi, Calcutta, 1909, p. 69.

but does not occur in extant Kāvya literature]—this is a Mandākrāntā verse with an initial heavy syllable :

*tasmād bhikṣārtham mama gurur itō yāvad ēva prayātaḥ
tyaktvā kāsāyam grham aham itas tāvad ēva prayāsyē |
pūjyam līṅgam hi skhalitamānasō bibhrataḥ klistabuddhēr
nāmutrārthāḥ syād upahatamatēr nāpy ayaṁ jīvalōkaḥ ||*

The scheme is this—

— | — — — | — ∪ ∪ | ∪ ∪ ∪ | — — ∪ | — — ∪ | — — ,

the scheme of the Mandākrāntā being—

— — — | — ∪ ∪ | ∪ ∪ ∪ | — — ∪ | — — ∪ | — — .

[ii] The verses 12. 43 ; 13. 56—[the metre of these verses also seems to be unknown in Sanskrit literature ; it is one of the three new metres which I have not noticed elsewhere in Sanskrit]—this metre is the Mandākrāntā lacking three syllables at the end, one short and two heavy—

*tasmād ēśām akuśalakarāṇām arinām
cakṣurghrāṇaśravaṇarasaṇāsparsanānām |
sarvāvasthām bhavati nīyamād apramattō
māsminn ariḥ kṣaṇam api kṛthās tvam pramādam ||*

[13. 56].

The scheme of this metre is—

— — — | — ∪ ∪ | ∪ ∪ ∪ | — — ∪ | — — ;

compare the scheme of the Mandākrāntā—

— — — | — ∪ ∪ | ∪ ∪ ∪ | — — ∪ | — — ∪ | — — .

Interpolation in the Brahma Sūtram

By M. M. CHATTERJI

There are three sūtras or aphorisms in the *Brahma Sūtram*, dealing with the question of food. The first of the trinity is :

सर्व्वान्नानुमतिश्च प्राणायये तद्दर्शनात् ।¹

Adhyāya III, Pāda 4, Sūtra 28.

In the commentary, ascribed to Śaṅkarācārya, this aphorism is based on the two Upaniṣadic texts quoted below :—

न ह वा एवं विदि किञ्चनानन्नं भवतीति ।²

Chāndogya Up., V. 1, 2.

The other text is as follows :—

न ह वा अस्यान्नं जगधं भवति नानन्नं प्रतिगृहीतम् ।³

Bṛhadāraṇyaka Up., VI. 1, 14.

Both texts unite in teaching that the universal life or breath eats all that is eaten by any individual. He who realises the identity in substance of his life with the universal life does so in thought alone. There is no injunction or permission concerning propriety of food applicable to individuals. This the commentary points out and adds that assuming such permission its operation is to be restricted to risks of death. In support of this view the commentary cites an Ākhyāyikā or story from the *Chāndogya* Upaniṣad. It relates that the sage Cākrāyaṇa ate forbidden food during a season of famine.

The commentator's application of the story to the aphorism under consideration appears to violate a prior aphorism (III, 4, 24) which limits the use of a story to the illustration of the

¹ And there is permission of all food, (only) in the case of danger of life; this is shown by scripture. *Sacred Books of the East*, Vol. XXXVIII, p. 309.

² To the realiser of this (i.e., unity in substance of his own breath, vitality, or life with the Divine energy, which is manifest as the life in all) nothing that can be eaten is no-food (i.e., prohibited). (The translation follows Śaṅkara.)

³ He who thus knows the food of Ana (the breath) by him nothing is eaten that is not (proper) food, nothing is received that is not (proper) food. *Sacred Books of the East*, XV, p. 204.

proximate vidyā or sacred science. The prior aphorism referred to is as follows :—

तथा चैकवाक्यतोपवन्मात् ।¹

Besides, each of the two texts cited in the commentary relates to Prāṇopāsana or devotion with life as a symbol (*pratīka*) while the Cākṛāyaṇa story is illustrative of Udgithavidyā where the symbol is the sacred syllable Om. The confused application, noticeable in the commentary, is an exegetical wrong.²

The next aphorism with its short commentary is given below :—

अवाधाच्च ।

एवं च सति “आहारशुद्धौ सत्वशुद्धिः” इत्येवमादिभक्ष्याभक्ष्य-
विभागशास्त्रमवाधितं भविष्यति ।³

It will be observed that the word “आहार” is here taken to mean “food” while in the text itself the word is explained by Śaṅkara, in his commentary, thus :—

आङ्गिर्यते इत्याहारः शब्दादि विषयज्ञानं भक्तुर्भोगाय आङ्गिर्यते ।⁴

It is clear that according to Śaṅkara purity of mind, by detachment from all egotistic regard for objects of sense generally is indicated by the words quoted from the text, without any special reference to selection of food. The reference really is to the mental condition in contact with objects of sense and not to objects of sense as such. All lurking doubts will be dispelled by the words that immediately follow the above :—

तस्य विषयोपलब्धिलक्षणस्य विज्ञानस्य शुद्धिराहारशुद्धिः, राग-
द्वेषमोहदोषैरसंस्पृष्टं विषयविज्ञानमित्यर्थः ।⁵

¹ This follows also from the connexion (of the stories with the vidyās) in one coherent whole. *S.B.E.*, Vol. XXXVIII, p. 305.

² For commentary in *extenso* with translation see Appendix.

³ And on account of the non-sublation.—III, 4, 29.

And thus those scriptural passages which distinguish lawful and unlawful food,—such as Ch. Up. VII, 26, 2, “When food is pure all nature is pure,”—are not sublated. *S.B.E.*, XXXVIII, p. 311.

⁴ (What one) collects is आहारः or collection. Perception of sound and the rest is collected for the experience of the perceiver.

⁵ The purity of that perception which is indicated by the knowledge of that (i.e., sound and other objects of sense) is the purity of आहार. The (true) meaning is that the perception of objects (shall be) untouched by attraction, repulsion, or confusion (of mind).

Śaṅkara, if the author of both the commentaries, must be found guilty of palpable self-contradiction, of which, one may make bold to assert, no other instance can be discerned by the most lynx-sighted critic. It would be in place here to notice the commentator's alternative interpretation of the texts cited connected, as it is, with the next aphorism and its commentary. The alternative interpretation is stated in the first place as glorification of one who assimilates the teachings of the two Upaniṣadic texts referred to in the commentary उत सुत्यर्थं सकीर्तित इति (literally, "or declared for glorification definitely"). This is confirmed in the conclusion thus :—तस्मादर्थवादः (therefore figurative expressions of praise or *अर्थवाद*) in the two texts referred to in the commentary and, as such, the texts are not to be literally understood. This view is attempted to be strengthened by the next aphorism :—

अपि च स्मर्यते ।

The commentary is short enough to be quoted here :—

“अपि च” आपदि सर्वान्नभक्षणमपि “स्मर्यते” विदुषोऽविदुष-
श्चाविशेषेण ।

“जीविताव्ययमापन्नो योऽन्नमत्ति यतस्ततः ।

लिप्यते न स पापेन पद्मपत्रमिवाम्भसा” ॥ इति ।

तथा ‘मद्यं नित्यं ब्राह्मणः ।’ ‘सुरापस्य ब्राह्मणस्योष्णामासिञ्चेयुः’
सुरापाः क्षमयो भवन्त्यभक्ष्यभक्षणात्’ इति च स्मर्यते वर्जनमनन्नस्य ॥¹

The plea of glorification completely fails. As the Smṛti quoted applies to men generally and not to the master of the vidyā or sacred Science the Upaniṣads teach. What applies in the same degree to all cannot be taken to glorify any particular class or its particularity. Finally, it is to be noted that the commentary at the outset mentions the alternative as presenting a doubt to be removed before either is accepted. But in the end it appears to accept both and in the next aphorism aid is invoked in support of the latter alternative, affirming glorification.

¹ And this is said in Smṛti also.

That in the cases of need both he who knows and he who does not know may eat any food Smṛti also states; compare, e.g., ‘He who being in danger of his life eats food from anywhere is stained by sin no more than the lotus leaf by water.’—On the other hand, many passages teach that unlawful food is to be avoided. ‘Intoxicating liquor the Brāhmaṇa must permanently forego’; ‘Let them pour boiling spirits down the throat of the Brāhmaṇa who drinks spirits’; ‘Spirit-drinking worms grow in the mouth of the spirit-drinking man, because he enjoys what is unlawful’.—*S.B.E.*, XXXVIII, p. 3II.

The teaching declares to spiritual view or faith the sentient unity of the energy perceived as operative in fire or heat and air or breath whose combined action results in digestion of food of all kinds in all. Śaṅkara derives from it no rule of conduct.

In short, the text teaches that purity of mind depends on its attitude towards objects of sense and not on the character of the objects themselves.

It is to be observed that the text is silent as to any evil arising from use of food. The pronouncement on this point is Śaṅkara's own.

It is clear that neither the text nor the commentary draws any practical rule for the selection of food. The teaching, when applied to conduct, will be effective in removing hate, contention, and strife including spiritual antipathy, based on the use of different kinds of food by peoples or individuals. The consideration of lawful food in Brāhmanism is outside the present purpose and it would be out of place to discuss Śaṅkara's conclusion except to point out its complete disagreement with the three aphorisms above considered and the relative commentaries. It is clear beyond the faintest doubt that to attribute the authorship of the commentaries to Śaṅkara is to destroy completely his authority as an exegetist owing to his glaring self-contradiction.

The above observations are submitted for authoritative judgment generally and specially on the following points, namely:—

- (1) Was the trinity of Sūtras referred to known to Śaṅkara?
- (2) Was Śaṅkara the author of the commentaries thereon?
- (3) Were the Sūtras interpolated between the time of Śaṅkara (7th Century A.D.) and that of Rāmānuja (11th Century A.D.) who laid great stress on selection and consumption of food?
- (4) Was the object of such interpolation the preservation of cultural independence against Moslem doctors, notwithstanding spiritual unity?

eaten is cooked, i.e., digested. Its noise is that one hears if one covers one's ears when he is on the point of departing this life. He does not hear that noise. *S.B.E.*, XV, p. 193.

APPENDIX

सर्वान्नानुमतिश्च प्राणात्यये तद्दर्शनात् ॥ २८ ॥

प्राणसंवादे श्रूयते हृन्दोगानाम्—‘न ह वा एवंविदि किञ्चनानन्नं भवति’ इति । तथा वाजसनेयिनाम्—‘न ह वा अस्यानन्नं जग्धं भवति नानन्नं प्रतिगृहीतम्’ इति । सर्वमस्यादनैयमेव भवतीत्यर्थः । किमिदं सर्वान्नानुज्ञानं श्रमादिवद्विद्याङ्गं विधीयत उत स्तुत्यर्थं संकीर्त्यत इति संशये विधिरिति तावत् प्राप्तम् । तथा हि प्रवृत्तिविशेषकर उपदेशो भवत्यतः प्राणविद्यासन्निधानान्तदङ्गत्वेनेयं नियमनिवृत्तिरूपदिश्यते । नन्वेवं सति भक्ष्याभक्ष्यविभागशास्त्रव्याघातः स्यात् । नैष दोषः । सामान्यविशेषभावाद्वाधोपपत्तेः । यथा प्राणिहिंसाप्रतिषेधस्य पशुसंज्ञपनविधिना वाधः । यथा च ‘न काञ्चन स्त्रियं परिहरेत्तद् व्रतम्’ इत्यनेन वामदेव्यविद्याविषयेण सर्वस्त्यपरिहारवचनेन तत्सामान्यविषयं गन्ध्यागन्धविभागशास्त्रं वाध्यते । एवमनेनापि प्राणविद्याविषयेण सर्वान्नभक्षणवचनेन भक्षाभक्ष्यविभागशास्त्रं वाध्येतेति । एवं प्राप्ते ब्रूमः—नेदं सर्वान्नानुज्ञानं विधीयत इति । न ह्यत्र विधायकः शब्द उपलभ्यते, ‘न ह वा एवंविदि किञ्चनानन्नं भवति’ इति वर्तमानापदेशात् । न चासत्यामपि विधिप्रतीतौ प्रवृत्तिविशेषकरत्वलोभेनैव विधिरभ्युपगन्तुं शक्यते । अपि च श्वादिमर्यादं प्राणस्यान्नमित्युक्तेरुच्यते नैवं विदिः किञ्चिदनन्नं भवति इति । न च श्वादिमर्यादमन्नं मनुष्यदेहेनोपभोक्तुं शक्यते । शक्यते तु प्राणस्यान्नमिदं सर्वमिति विचिन्तयितुम् । तस्मात् प्राणान्नविज्ञानप्रशंसार्थोऽयमर्थवादो न सर्वान्नानुज्ञानविधिः । तद्दर्शयति—“सर्वान्नानुमतिश्च प्राणात्यये”—इति । एतदुक्तं भवति प्राणात्यय एव हि परस्यामापदि सर्वमन्नमदनैयत्वेनाभ्यनुज्ञायते “तद्दर्शनात् ।” तथा हि श्रुतिश्चाक्रायणस्य ऋषेः कथायामवस्थायामभक्ष्यभक्ष्ये प्रवृत्तिं दर्शयति ‘मटचीहतेषु कुरुषु’ इत्यस्मिन् ब्राह्मणे । चाक्रायणः किल ऋषिरापद्रुत इभ्येन सामिखादितान् कुस्माणांश्चखाद अनुपानन्तु तदीयमुच्छिष्टदोषात् प्रत्याचक्षते । कारणश्चात्रोवाच ‘न वा अजौविध्यमिमानखादन्’ इति, ‘कामो म उदपानम्’

इति च । पुनश्चोत्तरेद्युस्तानेव स्वपरोच्छिष्टपुर्ण्युषितान् कुल्माषान्
भक्षयाम्बभूव इति । तदेतदुच्छिष्टोच्छिष्टपुर्ण्युषितभक्ष्यं दर्शयन्त्याः
श्रुतेराश्रयातिशयो लक्ष्यते प्राणान्वयप्रसङ्गे प्राणसन्धारणाया भक्ष्यमपि
भक्षयितव्यमिति । स्वस्यावस्थायान्तु तन्न कर्त्तव्यं विद्यावताऽपीत्यनुपान-
प्रत्याख्यानाद्भ्यते । तस्मादर्थवादो 'न ह वा एवंविदि' इत्येवमादिः ॥

And there is permission of all food, (only) in the case of danger of life; on account of this being shown (by scripture). 28.

In the colloquy of the Prāṇas the Chāndogas record, 'To him who knows this there is nothing which is not food' (Ch. Up. V, 1, 2); and the Vājasaneyins, 'By him nothing is eaten that is not food, nothing is received that is not food' (Brh Up. VI, 1, 14). The sense of the two passages is that anything may be eaten by him.—A doubt here arises whether the texts enjoin the permission of eating anything as an auxiliary to knowledge—as calmness of mind, etc., are—or mention them for the purpose of glorification.—The pūrvapakṣin maintains that the passages are injunctions because thus we gain an instruction which causes a special kind of activity. What, therefore, the text teaches is the non-operation of a definite rule, in so far as auxiliary to the knowledge of the Prāṇas in proximity to which it is taught.—But this interpretation implies the sublation of the scriptural rules as to the distinction of lawful and unlawful food! Such sublation, we reply, is possible, because the present case is one of general rule and special exception. The prohibition of doing harm to any living creature is sublated by the injunction of the killing of the sacrificial animal; the general rule which distinguishes between such women as may be approached and such as may not, is sublated by the text prescribing, with reference to the knowledge of the Vāmadevyā, that no woman is to be avoided ('Let him avoid no woman, that is the vow', Ch. Up. II, 13, 2); analogously the passage which enjoins, with reference to the knowledge of the Prāṇas, the eating of all food may sublate the general rule as to the distinction of lawful and unlawful food.

To this we reply as follows. The permission to eat any food whatever is not enjoined, since the passages do not contain any word of injunctive power; for the clause, 'To him who knows this there is nothing,' etc., expresses only something actually going on. And where the conception of an injunction does not naturally arise we may not assume one from the mere wish of something causing a special line of activity. Moreover the text says that 'for him who knows this there is nothing that is not food', only after having said that everything even

The Bhagavad Gītā teaches with completeness about food and feeder. But it would be out of place to consider such teachings at length in the present connection. It would be sufficient to refer to one verse (XV. 14) and Śaṅkara's commentary thereon:—

अहं वैश्वानरो भूत्वा प्राणिनां देहमाश्रितः ।

प्राणापानसमायुक्तः पचाम्यन्नं चतुर्विधं ॥¹

Śaṅkara's commentary on this verse runs as follows:—

किञ्च अहमिति । अहमेव वैश्वानर उदरस्थोऽभ्यन्तर्भूत्वा “यमग्नि-
वैश्वानरो योऽयमन्तःपुरुषे येनेदमन्नं पचते” इत्यादि श्रुतेर्वैश्वानरः सन्
प्राणिनां प्राणवतां देहमाश्रितः प्रविष्टः प्राणापानसमायुक्तः प्राणापानाभ्यां
समायुक्तः संयुक्तं पचामि पक्तिं करोमि । अत्र चतुर्विधं चतुःप्रकारं
अन्नमश्विनं भोज्यञ्च भक्ष्यञ्चोष्यं लेह्यञ्च भोक्ता वैश्वानरोऽग्निर्भोज्यमन्नं सोम-
स्तदेतद्भयमग्नौसोमौ सर्वमिति पश्यतोऽन्नदोषलेपो न भवति ॥ १४ ॥

Furthermore, “I” and so forth.—I (i.e., the Supreme) am the fire or energy in the digestive organ within creatures. According to the Upaniṣadic text “this fire is Vaiśvānara within individuals and by this food is digested and so forth”; “taking the form Vaiśvānara (and) entering into all living forms and united with upgoing and downgoing breath (i.e., inspiration and expiration), performs digestion. The kinds of food here referred to are classified according as it is to be chewed, sucked, licked, or drunk. The feeder is the fire (or energy called) Vaiśvānara and the food is Soma (universal Sapor). To one who views this in its universal aspect no evil comes from food.”

It is to be noted that Śaṅkara does not base the verse of the Bhagavad Gītā on the authority of the Upaniṣadic texts referred to above. The text partly quoted in Śaṅkara's commentary is Bṛhadāraṇyaka Upaniṣad (V. 9) which runs as follows:—

अयमग्निर्वैश्वानरो योऽयमन्तःपुरुषे येनेदमन्नं पचते यदिदमद्यते
तस्यैष घोषो भवति यमेतत् कर्णाविधाय प्रह्णोति स यदोक्रमिष्यन्
भवति नैनं घोषं प्रह्णोति ।²

¹ I, becoming Vaiśvānara and entering into the bodies of living creatures, digest the four kinds of food, being joined with the upward and downward life-breath.

² Agni Vaiśvānara is the fire within man by which the food that is

The teaching declares to spiritual view or faith the sentient unity of the energy perceived as operative in fire or heat and air or breath whose combined action results in digestion of food of all kinds in all. Śaṅkara derives from it no rule of conduct.

In short, the text teaches that purity of mind depends on its attitude towards objects of sense and not on the character of the objects themselves.

It is to be observed that the text is silent as to any evil arising from use of food. The pronouncement on this point is Śaṅkara's own.

It is clear that neither the text nor the commentary draws any practical rule for the selection of food. The teaching, when applied to conduct, will be effective in removing hate, contention, and strife including spiritual antipathy, based on the use of different kinds of food by peoples or individuals. The consideration of lawful food in Brāhmanism is outside the present purpose and it would be out of place to discuss Śaṅkara's conclusion except to point out its complete disagreement with the three aphorisms above considered and the relative commentaries. It is clear beyond the faintest doubt that to attribute the authorship of the commentaries to Śaṅkara is to destroy completely his authority as an exegetist owing to his glaring self-contradiction.

The above observations are submitted for authoritative judgment generally and specially on the following points, namely:—

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APPENDIX

सर्वान्नानुमतिश्च प्रागात्यये तद्दर्शनात् ॥ २८ ॥

प्रागसंवादे श्रूयते कन्दोगानाम्—‘न ह वा एवंविदि किञ्चनानन्नं भवति’ इति । तथा वाजसनेयिनाम्—‘न ह वा अस्यानन्नं जग्धं भवति नानन्नं प्रतिगृहीतम्’ इति । सर्वमस्यादनैयमेव भवतीत्यर्थः । किमिदं सर्वान्नानुज्ञानं श्रमादिवदिद्याङ्गं विधीयत उत स्तुत्यर्थं संकीर्त्यत इति संशये विधिरिति तावत् प्राप्तम् । तथा हि प्रवृत्तिविशेषकर उपदेशो भवत्यतः प्रागविद्यासन्निधानात्तदङ्गत्वेनेयं नियमनिवृत्तिरूपदिश्यते । नन्वेवं सति भक्ष्याभक्ष्यविभागशास्त्राघातः स्यात् । नैष दोषः । सामान्यविशेषभावाद्वाधोपपत्तेः । यथा प्राणिहंसाप्रतिषेधस्य पशुसंज्ञपनविधिना वाधः । यथा च ‘न काञ्चन स्त्रियं परिहरेत्तद् व्रतम्’ इत्यनेन वामदेव्यविद्याविषयेण सर्वस्त्यपरिहारावचनेन तत्सामान्यविषयं गम्यागम्यविभागशास्त्रं बाध्यते । एवमनेनापि प्रागविद्याविषयेण सर्वान्नभक्ष्यावचनेन भक्षाभक्ष्यविभागशास्त्रं बाध्येतेति । एवं प्राप्ते ब्रूमः—नेदं सर्वान्नानुज्ञानं विधीयत इति । न ह्यत्र विधायकः शब्द उपलभ्यते, ‘न ह वा एवंविदि किञ्चनानन्नं भवति’ इति वर्तमानापदेशात् । न चासत्यामपि विधिप्रतीतौ प्रवृत्तिविशेषकरत्वलोभेनैव विधिरभ्युपगन्तुं शक्यते । अपि च आदिमर्थ्यादं प्रागस्यान्नमित्युक्तेदमुच्यते नैवं विदिः किञ्चिदनन्नं भवति इति । न च आदिमर्थ्यादमन्नं मनुष्यदेहेनोपभोक्तुं शक्यते । शक्यते तु प्रागस्यान्नमिदं सर्वमिति विचिन्तयितुम् । तस्मात् प्रागान्नविज्ञानप्रशंसार्थोऽयमर्थवादो न सर्वान्नानुज्ञानविधिः । तद्दर्शयति—“सर्वान्नानुमतिश्च प्रागात्यये”—इति । एतदुक्तं भवति प्रागात्यय एव हि परस्यामापदि सर्वमन्नमदनैयत्वेनाभ्यनुज्ञायते “तद्दर्शनात् ।” तथा हि अतिश्चाक्रायणस्य ऋषेः कष्टायाः मवस्थायामभक्ष्यभक्ष्ये प्रवृत्तिं दर्शयति ‘मटचीहतेषु कुरुषु’ इत्यस्मिन् ब्राह्मणे । चाक्रायणः किल ऋषिरापद्रुत इभ्येन सामिखादितान् कुल्माषांश्चखाद अनुपानन्तु तदीयमुच्छिष्टदोषात् प्रत्याचचक्षे । कारणञ्चात्रोवाच ‘न वा अजौविध्यमिमानखादन्’ इति, ‘कामो म उदपानम्’

इति च । एनश्चोत्तरेद्युस्तानेव स्वपरोच्छिद्यपूर्युषितान् कुत्सायान्
भक्षयाम्भूव इति । तदेतदुच्छिद्योच्छिद्यपूर्युषितभक्षायं दर्शयन्त्याः
श्रुतेराश्रयातिशयो लक्ष्यते प्राणायामप्रसङ्गे प्राणसन्धारणाय भक्ष्यमपि
भक्षयितव्यमिति । स्वस्यावस्थायान्तु तन्न कर्त्तव्यं विद्यावताऽपौत्यनुपान-
प्रत्याख्यानाद्गम्यते । तस्मादर्थवादो 'न ह वा एवंविदि' इत्येवमादिः ॥

And there is permission of all food, (only) in the case of danger of life; on account of this being shown (by scripture). 28.

In the colloquy of the *Prāṇas* the *Chāndogas* record, 'To him who knows this there is nothing which is not food' (Ch. Up. V, 1, 2); and the *Vājasaneyins*, 'By him nothing is eaten that is not food, nothing is received that is not food' (Brh Up. VI, 1, 14). The sense of the two passages is that anything may be eaten by him.—A doubt here arises whether the texts enjoin the permission of eating anything as an auxiliary to knowledge—as calmness of mind, etc., are—or mention them for the purpose of glorification.—The *pūrvapakṣin* maintains that the passages are injunctions because thus we gain an instruction which causes a special kind of activity. What, therefore, the text teaches is the non-operation of a definite rule, in so far as auxiliary to the knowledge of the *Prāṇas* in proximity to which it is taught.—But this interpretation implies the sublation of the scriptural rules as to the distinction of lawful and unlawful food! Such sublation, we reply, is possible, because the present case is one of general rule and special exception. The prohibition of doing harm to any living creature is sublated by the injunction of the killing of the sacrificial animal; the general rule which distinguishes between such women as may be approached and such as may not, is sublated by the text prescribing, with reference to the knowledge of the *Vāmadevya*, that no woman is to be avoided ('Let him avoid no woman, that is the vow', Ch. Up. II, 13, 2); analogously the passage which enjoins, with reference to the knowledge of the *Prāṇas*, the eating of all food may sublate the general rule as to the distinction of lawful and unlawful food.

To this we reply as follows. The permission to eat any food whatever is not enjoined, since the passages do not contain any word of injunctive power; for the clause, 'To him who knows this there is nothing,' etc., expresses only something actually going on. And where the conception of an injunction does not naturally arise we may not assume one from the mere wish of something causing a special line of activity. Moreover the text says that 'for him who knows this there is nothing that is not food', only after having said that everything even

unto dogs and the like is food for the Prāṇa. Now food such as dogs and the like cannot be enjoyed by the human body; but all this can be thought of as food of the Prāṇa. From this it follows that the passage is an arthavāda meant to glorify the knowledge of the food of the Prāṇa, not an injunction of the permission of all food. This the Sūtra indicates in the words, 'and there is permission of all food in danger of life'. That means: Only in danger of life, in cases of highest need, food of any kind is permitted to be eaten. 'On account of scripture showing this'. For scripture shows that the ṛshi Cākṛāyaṇa when in evil plight proceeded to eat unlawful food. In the Brāhmaṇa beginning, 'when the Kurus had been destroyed by hail-stones,' it is told how the ṛshi Cākṛāyaṇa having fallen into great wretchedness ate the beans half eaten by a chief, but refused to drink what had been offered on the ground of its being a mere leaving; and explained his proceeding as follows: 'I should not have lived if I had not eaten them; but water I can drink wherever I like.' And again on the following day he ate the stale beans left by himself and another person. Scripture, in thus showing how the stale leaving of a leaving was eaten, intimates as its principle that in order to preserve one's life when in danger one may eat even unlawful food. That, on the other hand, in normal circumstances not even a man possessing knowledge must do this, appears from Cākṛāyaṇa's refusing to drink. From this it follows that the passage, 'For to him who knows this,' etc., is an arthavāda.

Brahmanism and Caste

By M. M. CHATTERJI

At the outset must be disclaimed all intention of considering the influence of the system of caste on the social and political welfare of a country like India, divided, as it is, into numerous tracts separated not by physical barriers, but by climatic and other natural conditions and subject to periodical famines affecting different tracts. The present subject is the relation of caste to spiritual life and faith.

Caste has a dual aspect as human type and human institution. In the former aspect caste is natural and in the latter conventional. In the former aspect caste is co-existent with collective human life, be it consciously recognised or be it not. This truth is clearly illustrated by the history of Europe where caste, in the Indian sense, does not and never did, in fact, exist.

Out of the chaos, created by the dissolution of Roman thought and dismemberment of the Roman Empire, arose the supremacy of the Christian Church, as the sole agency for co-ordination and harmony in human society. Shedding un-essential peculiarities this type is Brahman. The ascendancy of the Church, in outward life of peoples, was ended by the Treaty of Westphalia in 1648 A.D. From the ashes of Church supremacy arose monarchical autocracy, destroyed by the French Revolution. Then followed commercial rule, directed towards increase of wealth or possessions until checked by the rise of Labour in Politics. It is hardly necessary to point out that these gradations in collective life correspond to Kshatriya, Vaisya, and Sudra types. The evolution of collective life, above indicated, has created hardly any disorder in English history.

In India these four types appear to have been recognised in pre-historic period. The "Purusha Sukta" recognises with functional difference the four types as forming an organic whole.¹

"The Brahman was His face, the Kingly formed His arms, His thighs what are Vaisyas, from His feet were born Sudras."

¹ ब्राह्मणोऽस्य मुखमासीत् बाहू राजन्यः कृतः ।

अङ्गुलं तदस्य यद्वैश्याः पद्भ्यां शूद्रोऽजायत ॥

Rig- Veda, X, 90, 12.

It declares the universe of existence as a conscious individual with the four types as different but inter-dependent limbs of the same person.

The recognition of caste as type can be traced in an Upanishat of the highest class. Satya Kama (literally, "lover of truth"), though of unknown descent, was, for his truthfulness, invested with the insignia of the Brahman caste and spiritually instructed by Gautama. In this instance an honoured sage placed character over parentage.¹

Light is thrown on the subject in the Mahabharata.

"Of caste there is no distinction. All this passing sphere is of Brahma, created in the beginning. By Karma (conduct) caste-hood is arrived at."²

Caste as human type is also declared in Bhagavad Gita.

"According to the classification of action and qualities the four castes are created by me. Know me, non-actor and changeless, as even the author of this."³

Attempts with indifferent success, appear to have preceded the materialisation of the types into social and political institutions under the authority of Parasuram. He had destroyed royal families, root and branch. Then he established the four castes and having transferred the royal power to newly formed royal caste through a Brahman retired from active life.⁴

The Mahabharat shows that the influence of caste did not touch spiritual life, it being confined within the social and political sphere. This is well illustrated in the account given of Dharma Vyadha, the pious hunter, who attained divine faith though leading a hunter's life.⁵

A more striking instance is to be found in the ascetic Brahman being sent by the sage Narada to the herbalist Tuladhar for spiritual instruction.⁶

Narada, well-known in Sanskrit sacred writings, was the son of a slave girl, corresponding to a Jewish concubine. He is mentioned in the Chhandagya Upanishat as the spiritual pupil of Sanat Kumar.⁷

Vyasa the greatest Vedic teacher was the illegitimate son of the sage Parasara, his mother being a fisher-girl. In

¹ Chhan. Up., IV, 4.

न विशेषोऽस्ते वर्णानां सर्व्वं ब्राह्मिदं जगत् ।

ब्रह्मणो पूर्व्वदृष्टं हि कर्मभिर्वर्णतां गतः ॥

² Mahabharat, Santi P.A., 115.

चातुर्वर्ण्ये मया दृष्टं गुणकर्मविभागश्च ।

तस्य कर्तारमपि मां विद्वक्तारमवययम् ॥

³ Bhagavad Gita, IV, 13.

⁴ Mahabharat, Santi P.A., 49.

⁵ Mahabharat Vana P.A., 20.

⁶ *Ibid.*, Santi P.A., 26.

⁷ Chha. Up., 7, 1 and 26.

popular Brahmanic belief a curse descends on those who refuse to honour the sages on account of their origin.

The secular character of caste is manifest from its present forms. In Bengal leaving out Brahmins and Kayasthas, caste is mainly occupational. For instance Napit or barber is divided into two water-tight castes, *viz.*, Napit or barber, pure and simple and Madhunapit or confectioner. The strictest Brahmins will receive water and confectionery from the latter but not from the former. Jelia or fisher caste presents mutually exclusive sub-divisions—Jelia and Kaivarta. In Amar-kosha the terms are synonymous.¹ The latter in affluent circumstances call themselves Mahisya. Similarly it is found Sankha Vanika (shell-trader), Kansa Vanika (Brass-trader), Suvarna Vanika (gold-trader), Gandha Vanika (scent-trader), and so forth.

Brahmins of Bengal are mainly the descendants of those trained in the revived Vedic ritualism who immigrated into Bengal in the 8th Century accompanied by the ancestors of high-placed Kayasthas, designated Kulins, that probably in imitation of the differentiation of Brahmanas Kulins and Srotriyas in the 12th Century. The Vaidya or Medical caste is peculiar to Bengal. It does not seem unreasonable to believe that the Vaidyas, the most literate caste in Bengal, are remnants of the Buddhist clergy, overthrown by Brahman immigrants in concert with the ruling power. Caste rigidity diminishes among Vaidyas according to distance eastwards from Brahmanic centres on the banks of the Ganges. The question is too important and ecclesiastical for incidental treatment. For the present it would not be unreasonable to conclude that caste was not generally taken as inseparable from spiritual life.

In the post-Buddhist period, when religious ascendancy in Brahmandom generally became the prerogative of monastic orders, the true position of social conventions was shown by the existence of Paramahansas who still carry some marks of the original Brahmanic belief, disconnecting caste from spiritual life. Paramahansas are accepted as the quintessence of monastic life and free from all rules of conduct, monastic or lay. A sanctified will is believed to be their true and only guide in all things and at all times.

The disconnection of caste from spiritual life is clearly and repeatedly declared in the Upanishats. A striking instance may be cited. Svetaketu, the son of Aruna, though by caste Brahman, received spiritual instruction from King Prabahana Jaibali.²

¹ कैवर्ता दासः श्रीवर

² Chānd. Up., 5, 3, 5.

An exhaustive treatment of spiritual independence of Kings is to be found in Vedantaratna Srimat Hirendra Nath Datta's "Upanishat". The treatise, being in Bengali, a list of spiritual teachers is given in the Appendix.

The true significance of this episode is brought to light by the account given of Svetaketu. Svetaketu returned to his father on completing his pupilage. The father found him full of learning but without spiritual knowledge and instructed him in the most pure form of spiritual knowledge, technically called शुद्धब्रह्मविद्या. His meeting with the royal sage relates evidently to a later period when the hereditary spiritual independence of kings was declared.

The spiritual independence of Kings is also declared in the Bhagavad Gita (Cp. IV, 4).

"Thus successively transmitted, this the royal sages knew. By this great lapse of time that spiritual truth was lost, O, harasser of thy foes."¹

The expression राजर्षयो (Royal Sage) in the verse cited is significant. It indicates a class not mere individuals.

In three Sutras or aphorisms the Brahma Sutram sums up the canonical teaching of Brahmanism on the subject. They exhibit the promise of special grace to the seeker for spiritual life, in dissociation from caste and condition of life (Adhyay III, Pada 4, Sutras 36, 37, 38).

King Janaka's court, according to the Mahabharata (Santi P.A., 320), was graced by the presence of the spinster Sulava who held a spiritual discussion with the royal sage.

The considerations set forth above seem to lead to the irresistible conclusion that in canonical Brahmanism caste and sex are subjects wholly of secular importance and completely unrelated to spiritual life.

The texts that are usually cited as debarring the Sudra caste from acquiring true faith, are, when properly viewed, indicative of a privilege and not a disqualification. They impose on educated theologians the duty of imparting to the uneducated spiritual instruction without subjection to the necessity of hearing and minding the sacred word. It is the duty of those who have to give to those who have not—the rich to the poor, the wise to the unwise. But the individual has the right of self-protection on the legal protector's failure.

In popular estimation claiming the authority of canonical Brahmanism, the spiritual value of a Sudra and a woman of the highest caste is placed on the same footing. They are both considered debarred from the true spiritual life, declared by the

¹ एवं परम्परा प्राप्तमिमं राजर्षयो विदुः ।

स कालेनेह मद्भता योगो नष्टः परन्तप ॥

sacred word. The question affecting Sudras has been touched upon. Affecting women a reference is invited to Rigveda (Mondal X) for the names of women seers of truth, expressed by Vedic Mantras. For the present purpose may be named Vak, the daughter of the sage Ambhrina, evidently a spinster. The Mantras, first declared by her, are known as the Devi Sukta which literally means Vedic declaration concerning the Supreme, viewed as a woman and form the bridge connecting the Tantras with the Vedas.

The Brihadaranyaka Upanishat (Ad. II, Br. 4.) mentions Maitrayi, the wife of the sage Yajnavalkya, as having received the highest spiritual light. The same Upanishat (Ad. III, Br. 6) also mentions Gargi, the spinster daughter of the sage Vachakna, as the only competent questioner of the same sage, in the court of King Janaka. According to Śaṅkara she was gifted with Divine faith (Com. on B.S., A. iii, P. 4, Ap. 36).

In the Mahabharata is found the account of the fallen woman Pingalā who attained illumination in a single night and of Sulabha named above. All doubt and dispute are dispelled by the words of the Mundakya Upanishat: *आत्मज्ञमर्चयेत् भूतिकामः*. The injunction is that one desirous of well-being must honour him of true divine faith in disregard of caste and custom (Mund. Up. III, 11).

This declaration is noteworthy. It shows that caste condition and other things of external life are as nothing before Divine faith.

The following words may, in conclusion, be cited from the "Svetasvatara Upanishat," declaring the right of man as man to spiritual faith:—

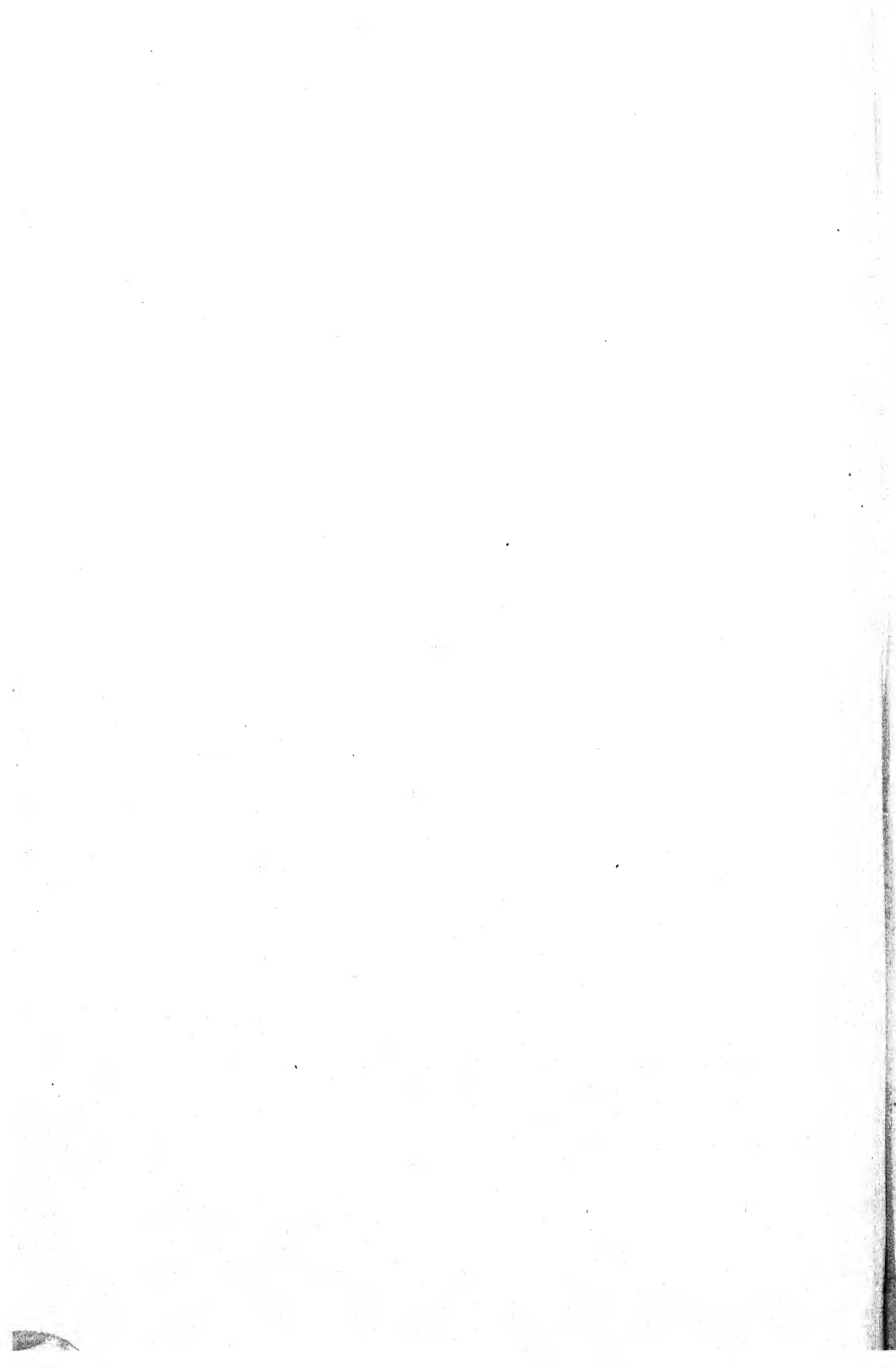
"Lend ear, ye children of immortality, in the world that is, all mankind."¹

APPENDIX

ROYAL PRECEPTORS.	BRAHMAN PUPILS.	REFERENCE.
Janaka ..	.. Buri Asvatarasvi	.. Br. Up. 5, 14, 8.
Prabahan Jaibali ..	.. Shilaka Dalava	.. Chha. Up., 1, 8, 2.
Atidhanva Saunaka ..	.. Udara Shandilya	.. Chha. Up., 1, 9, 3.
Prabahan Jaibali ..	.. Svetaketu	.. Chha. Up., 5, 3, 5
Chitra ..	.. Svetaketu	.. Rig-Veda.
		Kausitaki Up., A, 4.
Ajata Satru ..	.. Dripta Balaki	.. Br. Up., 2, 1, 13.
Asvapati Kaikeya ..	.. Satyajajna, son of Pulusha.	
	Indradumna, son of Ballavi.	
	Janaka, son of Sarvaraksha.	
	Buri, son of Asvatarasya ..	Chh. Up. A. 5.

¹ *शृण्वन्तु विश्वे अमृतस्य पुत्राः ।*

Sveta, Up. II, 5



Monasticism and Brahmanism

By M. M. CHATTERJI

The relation between Monasticism and canonical Brahmanism presents an interesting subject for inquiry. It appears convenient to follow the light held out by the Brahma Sūtram (Adhyāya III, Pada 4). It opens with the declaration that the end of intelligent existence including spiritual faith may be hoped to result from the study of the Upanishads independently of external works, conditions, and things.

"The purpose of man (is effected) thence, (*i.e.*, through the mere knowledge of Brahman), thus Badarayana opines."

The word "पुरुषार्थ" (Purushārtha) translated above as "purpose of man" is usually analysed into four elements according as the will is directed to *dharma* or righteous works enjoined by scriptures, *artha* or possessions, *kama* or delights of life, or *moksha* or unconditioned existence. Badarayana teaches that these four-fold objects of desire are added to true faith, declared by the sacred words. It would be sufficient to cite an Upanishadic text in support of the teachings.

"A pious votary of God obtains whatever division of the world and whatever desirable object he may wish to acquire for himself or for another: therefore any one, who is desirous of honour and advantage, should revere him."¹

(Raja Ram Mohun Roy's Translation.)

The original Sūtras in the order of their citation with the related commentaries of Śaṅkara and Rāmanuja are collected in Appendix I.

After refuting the opposite view that faith, dissociated from work was disapproved by sacred authority in the Brahma Sūtram, it shows that two types of those graced with faith are mentioned in the Upanishads according as faith is or is not associated with works and conditions of life (*asramas*).

The third Sūtra cites sacred authority showing the co-existence of faith with the house-holders' state of life.

"On account of scripture showing (certain lines of) conduct."

(B.S., III, 4, Sūtra 3.)

1 यं यं लोकं मनसा सम्निभाति विशुद्धसत्त्व कामयते यांश्च कामान् ।

तं तं लोकं जायते तांश्च कामांसस्मादात्मज्ञमर्चयेत् भूतिकामः ॥

Mundaka Up., 3, 10.

While the 9th Sutra shows presence of faith in the opposite state of life.

“But the declarations (of scripture) are equal (on the other side).”

(B.S., III, 4, Sutra 9.)

After dealing with the association of faith with the different conditions of life (*asramas*) the opposite aspect is dealt with in three Sutras which require special consideration owing to the importance of the subject. The three Sutras are cited below :—

“But also (persons standing) between (are qualified for knowledge); for that is seen (in scripture).”

“This is stated in *Smṛiti* also.”

“And the promotion (of knowledge is bestowed on them) through special acts.”

(B.S., III, 4, Sutras 36, 37, and 38.)

The foregoing considerations seem to make it clear that no special spiritual value is attached to any condition of life *प्रब्रज्या* (*Prabrajya*) is mentioned in the Upanishads in the sense of a wandering ascetic's condition of life and not as a congregational institution or monasticism. The term “*Prabrajya*” is taken as synonymous with *संन्यास* (*Sannyasa*) usually translated as renunciation. Even in *Manu*, “*Sannyasa*” is taken as the condition of an individual and not of a congregational institution or order.

“But having thus passed the third part of (a man's natural term of life) life in forest, he may live as an ascetic during the fourth part of his existence after abandoning all attachment to worldly objects.”¹

The purely secular and pragmatic value of *asramas* or conditions of life and the comparative superiority of *grhasthya* or the household conditions are fully demonstrated in the following Sutra :—

“On account of his being all, however, there is winding up with householder.”

(B.S., III, 4, Sutra 48.)

The position of monasticism in the religion of Buddha is well known. Its adoption and modification by Brahman revivalists is outside present consideration. The *Ajivikas* and *Sramanas* appear to be wholly unconnected with Brahmanism irrespective of their chronological origin.

1 वनेषु तु विहृत्यैवं द्वतीयं भागमायुषः ।

चतुर्थमायुषो भागं त्यक्त्वा सङ्गान् परिव्रजेत् ॥

Manu, C.P., VI, 33.

Sankaracharya is claimed as the founder of Brahmanic monasticism. But it can be asserted without hesitation that from his writings no authority can be cited in support of monasticism, as distinguished from wandering asceticism. There is no evidence of his having changed the name given to him in the home of his birth and he is always described as *paribrajaka* or wandering ascetic. His commentary on Adhya III of the Chhandogya Upanishad appears to be clearly in derogation of monasticism the external insignia of which, such as staff (*danda*) and bowl (*kamandalu*), are condemned by him. His principal disciples were named Padmapada, Hasthamalaka, and Sureswar, quite different from monastic name ending with "ananda". It is significant that Sureswar's original name of "Maudana" was changed into one, not ending with "ananda". He is said to have founded four *maths* or monasteries. In course of time the personal name and title of Sankaracharya became the official title of the respective heads of the four monasteries in suppression of individual names. This confusion between name and title appears to have led to a fiction hiding the real fact.

But the word "*matha*" meaning a monastery, is unknown to classical Sanskrit and is not at all to be found in any canonical scripture. In Mahabharata, Harivamsa, and Panchatantra it means an ascetic's hut.¹ To trace its derivation according to the method generally prevailing in Sanskrit seems hopeless. "Vihara", the Buddhist term for a monastery, is of high repute both in Pali and Sanskrit. So far as can be ascertained the present meaning of "*math*" is truly of recent origin, long after Viharas came into existence, when Brahman revivalists between the 7th and the 9th century adopted monasticism, they in imitation of the Vihara and in assertion of independence converted an ascetic's hut into a monastery. In practice, no Vedic authority is invoked in the consecration of a *math*, and the ceremony of initiation into any monastic order claiming to be Brahmanical is purely Tantric, without the faintest shadow of Vedic connection. The conclusion seems irresistible that Brahman revivalists took over the Vihara with the property-mark erased and independent proprietorship claimed by inscribing on it the fresh name—*math*.

With the foregoing observation the question of Buddhist origin of monasticism and its subsequent adoption by Brahman revivalists about the 7th century A.D. may be left to the impartial judgment of the disinterested.

To conclude: attention seems to be forced to the claim of Brahman Acharyas or preceptors to universality of their

¹ Mahābhārata 12/5348-3/16069.

Harivamsa 15857.

Panchatantra 33/5-116/18,22-117/1.

faith founded on their canonical scripture owing to its independence of personality and forms and conditions of external life, thus available for the benefit of all, while preserving their independence in practice.

APPENDIX I

Brahma Sutram III, 4—Sutras 3, 9, 36, 37, 38, 48. Original Sutras with the commentaries of Śāṅkara and Rāmānuja.

पुरुषार्थोऽतः शब्दादिति वादरायणः ॥ ३ ॥ ४ ॥ १ ॥

शङ्कराचार्यः—अथेदानीमौपनिषदमात्मज्ञानं किमधिकारि-
द्वारेण कर्मण्येवानुप्रविशति आहोस्वित् स्वतन्त्रमेव पुरुषार्थसाधनं
भवति इति मौमांसमानः सिद्धान्तेनैव तावदुपक्रमते ‘पुरुषार्थोऽतः’
इति। अतः अस्मात् वेदान्तविहितादात्मज्ञानात् स्वतन्त्रात् पुरुषार्थः
सिध्यतीति वादरायण आचार्यो मन्यते, कुत एतदवगम्यते, शब्दादि-
त्याह। तथा हि ‘तरति श्लोकमात्मवित् स यो ह वै तत्परं ब्रह्मवेद
ब्रह्मैव भवति ब्रह्मविदाप्नोति परं आचार्यवान् पुरुषो वेद तस्य तावदेव
चिरं यावन्न विमोक्षेऽथ सम्पत्स्य इति ‘य आत्माऽपहृतपाष्णा’
इत्युपक्रम्य ‘स सर्वांश्च लोकानाप्नोति सर्वांश्च कामान् यस्तमात्मानमनु-
विद्य विजानाति आत्मा वा अरे द्रष्टव्यः इति चोपक्रम्य ‘एतावदरे खल्व-
मृतत्वं’ इत्येवं जातीयका श्रुतिर्विद्यायाः केवलायाः पुरुषार्थहेतुत्वं आवयति।
अथात्र परः प्रत्यवतिष्ठते ॥

रामानुजः—गुणोपसंहारानुपसंहारफला विद्यैकत्व-नानात्वचिन्ता
कृत्वा; इदानीं विद्यातः पुरुषार्थः, उत विद्याङ्गात् कर्मणः? इति
चिन्त्यते। किं युक्तम्? अतः—विद्यातः पुरुषार्थ इति भगवान् वाद-
रायणो मन्यते; कुतः? शब्दात् दृश्यते ह्यौपनिषदः शब्दो विद्यते
पुरुषार्थं ब्रुवन्—

“ब्रह्मविदाप्नोति परम्” (तैत्ति. आन. १ अनु.)

“वेदाहमेतसं पुरुषं महान्तमादित्यवर्णं तमसः परस्तात्।

“तमेवं विद्वानमृत इह भवति। नान्यः पश्या विद्यतेऽयनाय”॥

यथा नद्यः स्यन्दमानाः समुद्रे अस्तं गच्छन्ति नामरूपे विहाय ।

तथा विद्वान् नामरूपादिसुक्ताः परात्परं पुरुषमुपैति दिव्यम् ॥

(मुण्ड . ३।२।८) इत्यादिः ॥ ३ ॥ ४ ॥ १

आचारदर्शनात् ॥ ३ ॥ ४ ॥ ३ ॥ .

शङ्करः—‘जनको ह वैदेहो बद्धदक्षिणेन ‘यज्ञेनेजे’ यक्ष्यमाणो वै भगवन्तोऽहमस्मि’ इत्येमादिनि ब्रह्मविदामपि अन्यपरेषु वाक्येषु कर्म-सम्बन्धदर्शनानि भवन्ति, तथोद्दालकादीनामपि पुत्रानुशासनादिदर्शनात् गार्हस्थ्यसम्बन्धोऽवगम्यते । केवलात् चेत् ज्ञानात् पुरुषार्थसिद्धिः स्यात् किमर्थमनेकायाससमन्वितानि कर्माणि ते कुर्युः, अर्के चेन्मधुविन्देम किमर्थं पर्वतं व्रजेत् इति न्यायात् ।

रामानुजः—ब्रह्मविदां प्राधान्येन कर्मस्वेवाचारो दृश्यते—अश्वपतिः केकयाः किल आत्मवित्तमत्तद्विज्ञानायोपगतान् तान्दधौ प्रत्याह—
“यक्ष्यमाणो ह वै भगवन्तोऽहमस्मि” (छान्दो . ५।१।५) इति तथा जनकादयो ब्रह्मावदग्रेसराः कर्मनिष्ठाः स्मृतिषु दृश्यन्ते ।

“कर्मण्येव हि संसिद्धिमास्थिता जनकादयः” (गीता . ३।२०.)
“इयाज सोऽपि सुबद्धन् यज्ञान् ज्ञानव्यपाश्रयः” । (विष्णु . पु . ६।६।१२) इति । अतो ब्रह्मविदां कर्मप्रधानत्वदर्शनाद् विद्यायाः कर्तृ-स्वरूपवेदनरूपत्वेन कर्माङ्गत्वमेवेति न विद्यातः पुरुषार्थः ॥ ३ ॥ ४ ॥ ३ ॥
लिङ्गमिदं ; प्राप्तिरुच्यताम् ? इत्यत्राह ।

तुल्यं तु दर्शनम् ॥ ३ ॥ ४ ॥ ६ ॥

शङ्करः—यदुक्तमाचारदर्शनात् कर्मशेषो विद्येतेत्यत्र ब्रुमः, तुल्य-माचारदर्शनमकर्मशेषत्वेऽपि विद्यायाः । तथाहि श्रुतिर्भवति ‘एतद्गू स्म वै तद्विद्वांस आऊर्कृषयः कारयेयाः किमर्थाः वयमधेष्ठ्यामहे किमर्था वयं यक्ष्यामहे एतद्गू स्म वै तत्पूर्वे विद्वांसोऽग्निहोत्रं न जुहवाञ्चक्रिरे एतं वै तमात्मानं विदित्वा ब्राह्मणाः पुत्रैषणायाश्च लोकैषणायाश्च व्युत्थायाथ भिक्षाचर्यं चरन्ति’ इत्येवं जातीयका । याज्ञवल्क्यादीनामपि ब्रह्मविदा-मकर्मनिष्ठत्वं दृश्यते ‘एतावदरे खल्वमृतत्वमिति होक्ता याज्ञवल्क्यः

प्रवव्राज' इत्येवमादिश्रुतिभ्यः। अपि च 'यच्चमागो ह वै भगवन्तोऽह-
मस्मि' इत्येतस्मिन्नुद्दर्शनं वैश्वानरविद्याविषयं सम्भवति च सोपाधिकायां
ब्रह्मविद्यायां कर्मसाहित्यदर्शनं न त्वत्रापि कर्माङ्गत्वमस्ति प्रकर-
णाद्यभावात्। यत् पुनरुक्तं तच्छ्रुतेः' इत्यत्र ब्रूमः ॥

रामानुजः—यदुक्तं ब्रह्मविदां कर्मानुष्ठानदर्शनाद् विद्या कर्माङ्गम्
इति; तन्न; विद्याया अनङ्गत्वेऽपि तुल्यं दर्शनम्, ब्रह्मविदां कर्मानु-
ष्ठानदर्शनम् अनैकान्तिकम् इत्यर्थः अनुष्ठानस्यापि दर्शनात्। दृश्यते
हि ब्रह्मविदां कर्मत्यागः “ऋषयः कावषेयाः किमर्था वयमध्येष्यामहे,
किमर्था वयं यक्ष्यामहे” इत्यादौ। अतो ब्रह्मविदां कर्मत्यागदर्शनात्
न विद्या कर्माङ्गम्।

कथमिदं उपपद्यते ब्रह्मविदां कर्मानुष्ठानमननुष्ठानञ्च? फलाभि-
सन्धिरहितस्य यज्ञादिकर्मणो ब्रह्मविद्याङ्गत्वात् तथाविधस्य
कर्मणोऽनुष्ठानदर्शनमुपपद्यते। वक्ष्यति च “सर्वापेक्षा च यज्ञादि-
श्रुतेरश्ववत्” (ब्रह्मसू. ३। ४। २६) इति। फलार्थस्य तस्यैव यज्ञादेः
कर्मणो मोक्षैकफलब्रह्मविद्याविरोधित्वात् तस्यानुष्ठानदर्शनमुपपन्नतरम्।
विद्यायाः कर्माङ्गत्वे कर्मत्यागः कथमपि नोपपद्यते ॥ ३ ॥ ४ ॥ ६ ॥

अन्तरा चापि तु तद्वृत्तेः ॥ ३ ॥ ४ ॥ ३६ ॥

शङ्करः—विधुवादीनां त्रयादिसम्प्रद्वितानाञ्चान्यतमाश्रमप्रतिपत्ति-
हीनानां अन्तरालवर्तिनां किं विद्यायामधिकारोऽस्ति किंवा नास्तीति
संगये नास्तीति तावत् प्राप्तं, आश्रमकर्मणां विद्याहेतुत्वावधारणात्
आश्रमकर्मासम्भवाच्चैतेषाम् इत्वेवं प्राप्ते इदमाह, अन्तरा चापि
तु, अनाश्रमित्वेनान्तराले वर्त्तमानोऽपि विद्यायामधिक्रियते, कुतः
तद्वृत्तेः, ऐक्याचक्रवौप्रभृतौनामेवभूतानामपि ब्रह्मवित्त्वश्रुत्युपलब्धेः ॥

रामानुजः—चतुर्णामाश्रमिणां ब्रह्मविद्यायामधिकारोऽस्ति;
विद्यासहकारिण आश्रमधर्मा इति चोक्तम्। ये पुनराश्रमानन्तरा-
वर्त्तन्ते विधुवादयः, तेषाम् ब्रह्मविद्यायामधिकारोऽस्ति, न वा?

इति विषये आश्रमधर्मेतिकर्तव्यताकत्वात् विद्यायाः, अनाश्रमिणां चाश्रमधर्माभावात् नास्त्यधिकारः,— इति प्राप्त उच्यते—

(सिद्धान्तः—)

“अन्तरा चापि तु” इति । तु शब्दः पक्षव्यावृत्त्यर्थः; च-शब्दोऽवधारणे । अन्तरा वर्तमानानाम् अनाश्रमिणामपि विद्यायामधिकारोऽस्त्येव । कुतः ? तद्वृत्तेः—दृश्यते हि रैक्ता-भौषण-सम्बर्त्तादीनामनाश्रमिणामपि ब्रह्मविद्यानिष्ठत्वम् । न चाश्रमधर्मेरेव विद्यानुग्रह इति शक्यं वक्तुम्, “यच्चेन दानेन तपसानाश्रमेन” (ऋहदा. ६। ४। २२) इति दानादीनामाश्रमेषु अनैकान्तिकानामप्यनुग्राहकत्वदर्शनात् । यथा ऊर्ध्वरेतःसु विद्यानिष्ठत्वदर्शनादभिहोत्रादिव्यतिरिक्तैरेव विद्यानुग्रहः क्रियते; तथानाश्रमिण्यपि विद्यादर्शनाद् आश्रमानियतैर्जपोपवासदानदेवताराधानादिभिर्विद्यानुग्रहः शक्यते कर्तुम् ॥ ३ ॥ ४ ॥ ३६ ॥

अपि च स्मर्यते ॥ ३ ॥ ४ ॥ ३७ ॥

शङ्करः—संवर्त्तप्रभृतीनाञ्च लग्नचर्यादियोगादनपेक्षिताश्रमकर्मणामपि महायोगित्वं स्मर्यते इतिहासे । ननु लिङ्गमिदं श्रुतिस्मृतिदर्शनमुपन्यस्तं का नु खलु प्राप्तिरिति साभिधीयते ।

रामानुजः—अपि च, अनाश्रमिणामपि जपादिभिरेव विद्यानुग्रहः स्मर्यते :—

“जप्येनापि च संसिध्येद् ब्राह्मणो नात्र संशयः । कुर्यादन्यन्न वा कुर्यान्मैत्रो ब्राह्मण उच्यते” ॥ (मनु . २। ८७) इति ।

संसिध्येत्—जपाद्यनुगृहीतया विद्यया सिद्धो भवतीत्यर्थः ॥ ३॥४॥ ३७॥

विशेषानुग्रहश्च ॥ ३ ॥ ४ ॥ ३८ ॥

शङ्करः,—तेषामपि विधुवादीनामविरुद्धैः पुरुषमात्रसम्बन्धिभिर्जपोपावासदेवताराधानादिभिर्धर्मविशेषैरनुग्रहो विद्यायाः सम्भवति । तथा च स्मृतिः,—

जप्येनैव तु संसिध्येद्ब्राह्मणो नात्र संशयः ।

कुर्यादन्यन्न वा कुर्यान्मैत्रो ब्राह्मण उच्यते ॥

इत्यसम्भवादाश्रमकर्मणोऽपि जपेऽधिकारं दर्शयति । जन्मान्त-
रावुष्ठितैरपि आश्रमकर्मभिः सम्भवत्येव विद्याया अनुग्रहः ।

तथा च स्मृतिः,—

‘अनेक जन्मसंसिद्धस्ततो याति पराङ्गति’ ।

इति जन्मान्तरसञ्चितानपि संस्कारविशेषानुग्रहीतृन् विद्याया
दर्शयति । दृष्टार्था च विद्या प्रतिषेधभावमात्रेणाप्यर्थिनमधिकरोति
श्रवणादिषु, तस्माद्विधुवादीनामप्याकारो न विरुध्यते ॥

रामानुजः,—

न केवलं न्याय-स्मृतिभ्यामयमर्थः साधनीयः ।

श्रूयते च अनाश्रमनियतैर्धर्मैर्विशेषैर्विद्यानुग्रहः—“तपसा ब्रह्म-
चर्येण श्रद्धया विद्ययात्मनमन्विष्येत् (प्रश्नो. १।१०)
इति ॥ ३ ॥ ४ ॥ ३८.

कृत्स्नभावात्तु गृह्णिणोपसंहारः ।

शङ्करः,—तु-शब्दो विशेषणार्थः, कृत्स्नभावोऽस्य विशिष्यते,
बङ्गलायासानि हि बह्वन्याश्रमकर्मणि यज्ञादीनि तं प्रति कर्त्तव्य-
तयोपदिष्टानि आश्रमान्तरकर्मणि च यथासम्भवमहिंसेन्द्रियसंयमा-
दीनि तस्यापि विद्यन्ते, तस्मात् गृहमेधिनोपसंहारो न विरुध्यते ॥

रामानुजः,—तु-शब्दश्चोद्यं व्यावर्त्तयति; कृत्स्नभावात् कृत्स्नेषु
भावात् कृत्स्नेष्वाश्रमेषु विद्यायाः सद्भावात् गृह्णिणोऽप्यस्तीति तेनोप-
संहारः; तस्मात् सर्वाश्रमधर्मप्रदर्शनार्थं गृह्णिणोपसंहार
इत्यभिप्रायः ॥

तथैतस्मिन्नपि वाक्ये “ब्राह्मणः पुत्रेषणायाश्च वित्तेषणायाश्च लोके-
षणायाश्च व्युत्थायाथ भिक्षाचर्यं चरति” (वृहदा. १५।५।१)
इति पारिव्राज्यैकात्तु धर्मं प्रतिपाद्य “तस्माद्ब्राह्मणः पाण्डित्यं निर्व्विद्य”
इत्यादिना पारिव्राज्यधर्मस्थितिहेतुकं मौनव्रतसहकारिविधानं
प्रदर्शनार्थमित्याह ।

APPENDIX II

Mahabharata—12/3348-3/16069.

Harivamsa—15857.

Panchatantra—33/5-116/18, 22-117/1.



The Vedic Divisions

By M. M. CHATTERJI

Let a short summary of the harmony between reason and faith, established by Brahman theology serve as an introduction. The existence of scriptural words which are not meaningless sounds but are self-consistent and indicative of an entity imperceptible by the senses and inconceivable by the mind, must by rational compulsion be taken as designation of what is super-rational and not irrational. The Brahmanic exegetical rule of correct interpretation of scriptural teachings in a somewhat amplified form will be found in Appendix I.

Such words as received by individuals in untraceable antiquity are known as the Vedas. They were collected and arranged in four divisions by Vyasa, under divine commission issued to him—when he was called into being not born, and named, Apantaratama, literally meaning “Removed from darkness”.¹ Apantaratama, under the name of Vyasa, was the arranger of the Vedas but he was not any of the seers of the truth expressed in Vedic word. These Rishis—literally seers may be called Revealers. The Revealers of spiritual truth are recognised in every religion accepting scriptures. In the Sankhya system they are classified in a plain, rational form, intelligible to the ordinary mind. Revealers are, in this system, divided into three classes, namely, “Prakrita” or “Svavavika,” “Sansiddhika,” and “Vaikarika.” Their general designation is “Sidha” or perfect. The perfection of “Svavavika or Prakrita” Sidhas is inherent and not acquired. At no point of time they are not perfect, their perfection is without beginning or end. So far as the individual is concerned the “Sansiddhika” Sidhas were once imperfect but acquired perfection in the remote past. They work from no self-centered motive but out of compassion for the sufferings of the imperfect. While the origin of perfection of Vaikarikas is traceable in time and to their preceptors. All these classes of the perfect are included in Prakriti, the totality of powers, attributes, and forms.

But Prakriti and Purusha or pure sentience are one in being *per se*. This is known as Kaivalya or onliness. There can scarcely be any doubt that with changed terminology this classification was adopted by the Mahayana form of Buddhism.

¹ Appendix II.

Adi¹ or original Buddhas are Svavavika Sidhas, Dhyani Buddhas are Sansidhas, and the Vaikarika Sidhas are Manushi Buddhas.

The history of human thought makes it clear that every object considered abstract or inanimate at a later period, was regarded at an earlier period as sentient being. This practice now survives as poetical expression. The process is reversed when a spiritual idea originates in the intellectual form which is universal. Divine aspects can, obviously, be expressed only in an intellectual form. But in course of time and for general apprehension each aspect is taken as a person. Following this rule the category technically known as Mahat-tattva, the highest form of specialised existence in the Sankhya system, and declared as over-shadowed by Purusha or sentience is the same as Brahma, the archangel of creation. According to the Svetaswatara² Upanishat "the Supreme Being calls him into existence and transmits into him all the Vedas." And Brahma is the ultimate source of revelation. The knowledge derived from Brahma is taken to have been declared by Sanaka, Sananda, Sonatan, and Sanat Kumar, the four eternally youthful sages described as sons of Brahma's mind. They are Prakritika or Swavavika Sidhas, while Kapila and Suka, who acquired perfection within definite time as result of devotion, are to be taken as Sansidhika Sidhas. Vasista, the paragon of non-resistance, is classifiable as Sansidhika Sidha or perfected individual. He and his great grandson, Vyasa, owing to their respective peculiarities, are termed Adhikarika Purushas. They are called Adhikarika Purushas in the Brahma Sutram and described as respectively charged with divine mission for the benefit of creatures.

The Brahmanic doctrine directed to faith in the eternal, all-powerful, all-wise Isvara, the Creator, Sustainer, and Absorber of all, reduces the importance of the Svavavika Sidhas for practical purposes of devotion. But the two doctrines, Vedic and Sankhya, are no ways in conflict. For He who can create perfectible beings can equally well create those that are perfect when projected into individual existence.

Apantaratama deserves special consideration for the present purpose. The Mahabharata³ relates how Apantaratama appeared under the name Vyasa to arrange the Vedas and how

¹ आदि बुद्धाः प्रकृत्यैव सर्वधर्माः सुनिश्चिताः ।

Adi Buddhas, the perfect certainty of all righteousness are Prakriti even. This identity is traced by Gaudapada in Mandakya Karika.

² यो ब्राह्मणं विदधाति पूर्वं वेदांश्च सर्वान् प्रदिनति तस्मै ।

Svetaswatara Upanishat.

³ Mahabharata, Shanti Parva, Mokshadharma Parbadhya, A. 350.

he executed his commission and continued his individual existence on earth. Apantaratama's name in his earthly life was Vyas. According to the Vedantic School of Sankaracharya the preceptorship of Vyas in his life time descended on his son Suka. These considerations are explanatory of the theological position of Puranas and the Mahabharata as subordinate to the Vedas of which the authorship is attributed to Vyasa.

The Vedas are accepted as the store-house, supplying when properly understood the means for the attainment of temporal and spiritual well-being of mankind, irrespective of external condition.

According to the Mahabharata time came when the Vedas needed arrangement in parts calculated to apply to different stages of the social growth of the human race and for this purpose special divine inter-position was necessary.

The principle underlying the division of the Vedas into four classes is strikingly interesting.

In the most primitive condition of humanity every individual man has constantly to fight for food and wife at the risk of life and limb. In that stage of social life magical rites compelling self-surrender on the part of a woman or paralysing an enemy from a distance and other means of self-gratification accompanied by some self-security would be invaluable, and the master magician would be the king and the subjects and tribesmen prosperous in life. This is the underlying unity of the Atharva Veda. With the growth of social stability and extension the practice of magic for individual benefit will be prohibited as destructive of orderly social existence and will be allowed only as between heads of states, king and king.

Rites adopted to this end, as declared in Vedic mantras, are collected in the division of the Vedas called the Yajurveda.

Further progress of peace and orderliness generates the inquiry relating to the agency that can create a rite which when duly performed secures the desired result. Obviously, the agency is of much greater value than all the rites collectively. The result does not benefit the agent but the performer of the rite. The number of rites performed does not exhaust the power of the agent unmoved by fear in fulfilling the performer's desire. The value of the agent, when realised, is love in theological language. This is the characteristic of the Vedic division, the Samaveda.

Continued social advancement generates the intellectual search for the nature of the Agent as to what and how He is. The search made in faith declares the Divine Being as apprehensible and not comprehensible. This is the distinguishing mark of the Rigveda.

It is clear that the principle of division relates to general conditions and not to individual self. There can be nothing to prevent the presence of the four types among contemporaries.

Superficial observation can trace the presence of gratification in religions accepting scriptures corresponding to the principle of the Vedic classified arrangement of Vyasa. The ten great (maha) Upanishats are connected as appendices with all the four Vedas, showing the independence of spiritual life. It is unaffected by all external conditions of existence. The door of spirituality is open to all irrespective of race, nationality, sex and position, social and intellectual.

The history of previous attempts to trace in time the origin of Vedic mantras and the great Upanishats must discourage all attempts in that direction.

APPENDIX I

Savara Swami, the exegetist of Vedic Ritualism, technically called Purva Mimamsa, gives a very clear exposition of the rational basis of Scriptural teaching which is obviously super-rational. His exposition is founded on technical logic and psychology, not easy for general grasp in the present day. An attempt to modernise his thought may not be inexcusable. The normal sources of right knowledge are sense-perception and the logical faculty. The sphere of sense-perception is confined to sound, touch, visible form, taste, and smell responding to ear, skin, eye, tongue, and nose. The work of the logical faculty is either deductive or inductive. Induction leads only to probability and not to certainty which, along this line, can only be attained by omniscience, unclaimed by all users of the inductive method of acquiring knowledge. In deductive logic the major premise must be more extensive than the conclusion. Obviously, therefore, the all-comprehending cannot be the conclusion of any process of deductive reasoning. And yet the Scriptures declare that the ultimate Reality—the Being *per se* is none of the objects of the senses or their aggregate. Nor can that Reality or Being be spoken by speech or minded by the mind. So the Scriptures teach. Whence these teachings? Their source is designated Revelation in English, in which the substance of Scriptural teaching indicated can be stated thus:

God can be apprehended and not comprehended. That God is can be conceived but what and how He is, is inconceivable. This truth is received by faith and not by knowledge with the full assent of reason which points out that if the words, giving birth to faith, did not indicate truth their very existence is inexplicable. Exegetists teach that the Scriptural teachings are correctly understood only when they are seen to point to something, untouched by sense and the logical faculty. "Apurvata," that is, dissociation from sense and reason is the essential characteristic of the truth, declared by the Scriptures. All scriptural statements whose meaning lies within the sphere of sense-perception or of the logical faculty, must be taken as "Arthavāda" or figurative and not literal or Yathārthavāda. There are other tests of true spiritual interpretation, though not of great use in the present connection. They have to be stated only for the sake of completeness. Harmonious relation between the beginning and the end ("Upakrama", "Upasan-hāra"), repetition in different forms ("Abhyāsa"), and usefulness ("Falasruti").

In these observations * relating to Brahmanic faith an attempt has been made to avoid all theological technicalities, not necessary as a disclaimer of originality of the present effort. They are intended to serve as preparatory to the consideration of the present-day conflict between Science and Religion. The apparently rational basis of the conflict will disappear on consideration of the respective spheres of Science and Religion—Science lies within the sphere of sense and logic while Religion is admittedly super-sensuous and super-rational distinguished from irrational. Reason, though not the generator of Religion, cannot be discordant with it. The relation with sense is similar. Religion is hospitable to sense which, however, cannot touch Religion.

To descend to particulars. The main conflict is between narratives of creation, contained in some writings, regarded as holy, and the scientific doctrine of organic evolution.

In the most authoritative scriptures of Brahmanism different descriptions are given of creation. For instance, compare Chândogya-panishad (III, 19) and Aitareyopanishad (IV). Śāṅkara in his commentary on the text, last referred to, clearly states :—

“नहि सृष्ट्या व्यायादिपरिज्ञानात् फलं किञ्चिद्विद्यते ।”

(No benefit can, in truth, be expected from knowledge of narratives of creation and others of that kind.)

The only object of such narratives seems to be to teach the value of super-temporal peace against unrelenting change and the contingent character of all our existence.

Some Brahmanic scriptures give the foetal history of the human individual which is practically identical with what Haeckel calls the doctrine of recapitulation. One wonders how Science will explain the existence of types. Specks of waggling matter, called protoplasm, which Science cannot distinguish from one another, develop very differently—one into a vegetable, another into an animal, and the third into a human being. Imagine the absence of pre-existing individuals of these types and then search for explanation of the difference in typical development, estimating the chances of success in the search.

Then comes the question of speech, the vehicle of Revelation. At the outset one is met with the distinction between sound (in Sanskrit *Dhvani*) and word (in Sanskrit *Śabda*). The sound of a loud explosion startles, frightens, and may result in the hearer's running away. But it generates no idea for intellectual apprehension, capable of being connected with other ideas and communicated to others. While a word, for instance, “love” or “fear”, gives rise in the mind to a definite and abiding impulse, operative in action, feeling and thought, long after it is for the first time heard and is capable of communication to others independently of gesture. The most noticeable peculiarity of word is its pervasiveness in regard to the whole of conscious life and freedom from the restraint of individual life and its conditions. In short, word generates mental modification, dissociated from the body and its functions and is pervasive, permanent, and communicable.

In an authoritative Sanskrit treatise on the subject, though not of the highest spiritual value, the genesis of Word is traced through four stages. A ray of thought impinges on the individual consciousness from a source to that consciousness unknown. This immediately generates the impulse to find for it an expression in word which, when found, excites the effort for its utterance with which the cycle is completed. The thought impulse, undefined, is known as “para,” the supreme, in the next stage it is named “pasyanti” or watching (literally, the seeing one). In the stage immediately following it is “madhyamā”

* See Appendix I.

or the middle one, when the word, though unuttered, is known to the would-be utterer and when uttered it is "vaikhari" or the sharp one.

In the universal aspect word is known as the Word-God (Sabda Brahma). Lakshmanacharya of Kanauj in his "Sarada tilak" sums up the Tantric teaching on the subject.

The first in thought, but not in time, is Nāda (literally, sound) but in this connection unconditioned consciousness—*नादात्मनदति स्वयम्* (literally, the sound spirit sounds of itself). Thence is determination or the determining point, Vindu. From Vindu are the three powers, namely, cognition, impulsion, and inhibition. Consciousness, or sentience, thus viewed, is Sabda Brahma or Word-God. He says: "It is my conviction that Sabda Brahma is the consciousness of all individuals—*चैतन्यं सर्वभूतानां शब्दब्रह्मेति मे मतिः*."

The enquirer may be usefully referred to the opening chapter of the Gospel of St. John.

The above summary may be guilty of prolixity. But some reference to the subject seems necessary for an examination of the relation of speech to organic evolution.

The subject for consideration is the absence in the animal world of word, as distinct from sound. In brief, words have a meaning independent of the sound, as is evidenced by the existence of synonyms in the same language, apart from figurative expressions. In the animal world are found bark, grunt, twitter, chirp, and other forms of acoustic expressions. They are useful in maintaining individual and associated life. Impulses of fear and other preservative and associative instincts are expressible by the animal call. The sphere of word is far more comprehensive. Word can express the ideas of cause and effect, substance and form, certainty, contingency, and so forth. A shout may be helpful in avoiding danger to life and limb but can it, independently of word, express the emotion of fear, apart from its bodily effect? This peculiarity of word is called "sphota" by the school of Pāṇini. Take, for example, the word "go" (गो) meaning cow. On its utterance images of cows, different in colour and form, present themselves to different hearers. *Sphota* is the potency of a word to evoke in individuals thought-images of different forms but all belonging to the same class. Sāṅkara accepts the existence of "sphota" but rejects its eternal character as maintained by the Pāṇini school.¹

Thus viewed, word appears to be *sui generis*. Will it be unpardonable to invite the attention of Science to the peculiar characteristic of word? In conclusion, Religion may well say to Science—"Now let us shake hands and part, each to his business."

MOHINI MOHAN CHATTERJI

¹ Sāṅkara's commentary on the "Brahma Sutra". Thibaut's translation (S.B.E., Vol. I, pp. 204-209).

APPENDIX II

Brahma Sūtram

III Adhyaya, 3 Pada, Sloka 32

यावदधिकारमवस्थितिराधिकारिकाणाम् ॥

विदुषो वर्त्तमानदेहपातानन्तरं देहान्तरमुत्पद्यते न वेति चिन्त्यते । ननु विद्यायाः साधनभूतायाः सम्पत्तौ कैवल्यनिवृत्तिः स्यान्न वेति नेयं चिन्तोपपद्यते । न हि पाकसाधनसम्पत्तावोदनो भवेत् न वेति चिन्ता सम्भवति । नापि भुञ्जानसृष्टेत् न वेति चिन्त्यते । उपपन्ना लियं चिन्ता । ब्रह्मविदासपि केषाञ्चिदितिहासपुराणयोर्देहान्तरोत्पत्तिदर्शनात् । तथा ह्युपान्तरतमा नाम वेदाचार्यः पुराणपिर्विष्णुनिगोयात् कलिङ्गापरयोः सन्धौ कृष्णद्वैपायनः सम्बभूवेति स्मरणम् । वसिष्ठश्च ब्रह्मणो मानसः पुनः सन्निमिश्रापादगतपूर्वदेहः पुनर्ब्रह्मादेशात् मित्रावरुणाभ्यां सम्बभूवेति । भृग्वेदादीनामपि ब्रह्मण एव मानसानां पुत्राणां वारुणे यज्ञे पुनरुत्पत्तिः स्मर्यते । सनत्कुमारोऽपि ब्रह्मण एव मानसः पुनः स्वयं रुद्राय वरप्रदानात् स्कन्द तेन प्रादुर्बभूव । एवमेव दक्षानारदप्रभृतिनामपि भूयसो देहान्तरोत्पत्तिकथा तेन तेन निमित्तेन भवति स्मृते । श्रुतावपि मन्त्रार्थवादयोः प्रायेणोपलक्ष्यते । ते च केचित् पतिते पूर्वदेहे देहान्तरमाददते केचित् स्थित एव तस्मिन् योगैश्वर्यवशादनैकदेहादानन्यायेन । सर्वे चैते समधिगतसकलवेदाः स्मर्यन्ते । तदेतेषां देहान्तरोत्पत्तिदर्शनात् प्राप्तं ब्रह्मविद्यायाः पाक्षिकं मोक्षहेतुत्वहेतुत्वं वेत्यत उत्तरमुच्यते । न । तेषामुपान्तरतमः प्रभृतौनां वेदप्रवर्तनादिषु लोकस्थितिहेतुष्वधिकारेषु नियुक्तानामधिकारतन्त्रत्वात् स्थितेः । यथासौ भगवान् सविता सहस्रयुगपर्यन्तं जगतोऽधिकारं चरित्वा तदवसाने तृदयास्तमयवर्जितं कैवल्यमनुभवति 'अथ तत ऊर्ध्वं उदेत्य नैवोदेता नास्तमेतैकल एव मध्ये स्थाता' इति श्रुतेः । यथा च वर्त्तमाना ब्रह्मविदः प्रारब्धभोगक्षये कैवल्यमनुभवन्ति । "तस्य तावदेव चिरं यावत् न विमोक्ष्येऽथ सम्पत्स्ये" इति श्रुतेः । एवमुपान्तरतमः प्रभृतयोऽप्येश्वराः परमेश्वरेण तेषु तेष्वधिकारेषु नियुक्ताः सन्तः सत्यपि सम्यग्दर्शने कैवल्यहेतावच्छौणिककर्माणो यावदधिकारमवतिष्ठन्ते तदवसाने चापहृज्यन्ते इत्यविरुद्धम् । सकृत्प्रवृत्तमेव हि ते कर्माशयमधिकारफलादानायाऽतिवाहयन्तः स्वातन्त्र्येण गृह्णादिव गृह्णान्तरमन्यमन्यं देहं सञ्चरन्तः साधिकारनिर्वृत्तनाया परि-सुषितस्मृतय एव देहेन्द्रियप्रकृतिवशित्वात् निर्माय देहान् युगपत् क्रमेण वाऽधि-तिष्ठन्ति । न चैते जातिस्मरा इत्युच्यते । त एव ते, इति स्मृतिप्रसिद्धेः । यथा सुलभा ब्रह्मवादिनो जनकेन विवदितुकामाबुदस्य स्वं देहं जानकं देहमाविश्व बुद्ध तेन पश्चात्तं स्वमाविशे इति स्मर्यते । यदि ह्युपयुक्ते सकृत्प्रवृत्ते प्रारब्धविपाके कर्मणि कर्मान्तरमप्रारब्धविपाकं देहान्तरारम्भकारणमाविर्भवेत् ततोऽन्यदयदशवौजं कर्मा-न्तरं तद्वदेव प्रसज्येतेति ब्रह्मविद्यायाः पाक्षिकं मोक्षहेतुत्वहेतुत्वयं वा शङ्कोत । न लियमाशङ्का युक्ता । ज्ञानात् कर्मवौजदाहस्य श्रुतिस्मृतिप्रसिद्धत्वात् । तथा हि श्रुतिः—

‘भिर्यते हृदयग्रन्थिच्छिद्यन्ते सर्वसंशयाः ।

क्षीयन्ते चास्य कर्मणि तस्मिन् दृष्टे परावरे’ ॥ इति—

‘स्मृतिलक्ष्मे सर्वग्रन्थीनां विप्रमोक्ष’ इति चैवमाद्या । स्मृतिरपि ।

“यथैधांसि समिद्धोऽग्निर्भस्मसात् कुरुतेऽर्जुन ! ।

ज्ञानाग्निः सर्वकर्माणि भस्मसात् कुरुते तथा” ॥ इति—

“वीजान्यग्न्युपदग्धानि न रोहन्ति यथा पुनः

ज्ञानदग्धैस्तथा क्लेशैर्नात्मा सम्पद्यते पुनः” ॥ इति—

चैवमाद्या । न चाविद्यादिल्लेशदाहे सति क्लेशवीजस्य कर्माशयस्यैकदेशदाह एकदेशप्ररोहस्येत्युपपद्यते । न ह्यग्निदग्धस्य शालिवीजस्यैकदेशप्ररोहो दृश्यते । प्रवृत्तफलस्य तु कर्मणो मुक्तेषोरिव वेगचयात् निवृत्तिः । ‘तस्य तावदेव चिरम्’ इति शरीरपातत्वेपकारणात् । तस्मादुपपन्ना यावदधिकारमाधिकारिकाणामवस्थितिः । न च ज्ञानफलस्यानैकान्तिकता । तथाच श्रुतिरविशेषणैव सर्वेषां ज्ञानान्मोक्षं दर्शयति ‘तदुयो देवानां प्रत्यबुध्यते स एव तदभवत्तथर्षीणां तथा मनुष्याणाम्’ इति । ज्ञानान्तरेषु चैश्वर्यादिफलेष्वाप्तताः स्युर्माहर्षयस्ते पश्चादैश्वर्य्यक्षयदर्शनेन निर्व्विषाः परमात्मज्ञाने परनिष्ठाश्च कैवल्यं ययुरित्युपपद्यते ।

‘ब्रह्मणा सृष्टे ते सर्वं’ सम्प्राप्ते प्रतिसञ्चरे ।

परस्यान्ते कृतात्मनः प्रविशन्ति परं पदम्’ ॥ इति स्मरणात् ।

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On the ground of all this the purvapakshin maintains that the knowledge of Brahman may, indifferently, either be or not be the cause of final release.

This we deny, for the reason that the continuance of the bodily existence of Apantarātmās and others—who are entrusted with offices conducive to the subsistence of the worlds, such as the promulgation of the Vedas and the like—depends on those their offices. As Savitrar (the sun), who after having for thousands of yugas performed the office of watching over these worlds at the end of that period enjoys the condition of release in which he neither rises nor sets, according to Kh. Up. III, II, 1, 'When from thence he has risen upwards, he neither rises nor sets. He is alone standing in the centre;' and as the present knowers of Brahman reach the state of isolation after the enjoyment of those results of action, which have begun to operate has come to an end, according to Kh. Up. VI, 14, 2 'For him there is only delay so long as he is not delivered from the body;' so Aparātmās and other Lords to whom the highest Lord has entrusted offices, last—although they possess complete knowledge, the cause of release—as long as their office lasts, their works not yet being exhausted, and obtain release only when their office comes to an end. For gradually exhausting the aggregate of works the consequences of which have once begun, so as to enable them to discharge their offices; passing according to their free will from one body into another as if from one house into another, in order to accomplish the duties of their offices; preserving all the time the memory of their identity; they create for themselves through their power over the material of the body and the sense organs new bodies, and occupy them either all at once or in succession. Nor can it be said that when passing into new bodies they remember only the fact of their former existence (not their individuality); for it is known that they preserve the sense of their individuality. Smṛiti tells us, *e.g.* that Sulabha, a woman conversant with Brahman, wishing to dispute with Ganaka, left her own body, entered into that of Ganaka, carried on a discussion with him, and again returned into her own body. If in addition to the works the consequences of which are already in operation, other works manifested themselves, constituting the cause of further embodiments, the result would be that in the same way further works also, whose potentiality would in that case not be destroyed, would take place, and then it might be suspected that the knowledge of Brahman may, indifferently, either be or not be the cause of final release. But such a suspicion is inadmissible since it is known from Śruti and Smṛiti that knowledge completely destroys the potentiality of action. For Śruti says, 'The fetter of the heart is broken, all doubts are solved, all his works perish when He has been beheld who is high and low' (Mu. Up. II, 2, 8); and, 'When the memory remains firm, then all the ties are loosened' (Kh. Up. VII, 26, 2). And Smṛiti similarly says, 'As a fire well kindled, O Arguna, reduces fuel to ashes, so the fire of knowledge reduces all actions to ashes;' and, 'As seeds burned by fire do not sprout again, so the Self is not again touched by the afflictions which knowledge has burned'. Nor is it possible that when the afflictions such as ignorance and the like are burned, the aggregate of works which is the seed of affliction should be partly burned, but partly keep the power of again springing up; not any more than the seed of Sali, when burned, preserves the power of sprout-

‘स्मृतिलभे सर्वग्रन्थानां विप्रसोच’ इति चैवमाद्या । स्मृतिरपि ।

“यथैधांसि समिद्धोऽग्निर्भस्मसात् कुरुतेऽर्जुन ! ।

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Was Viśākha Datta a Bengali ?

By JOGENDRA CHANDRA GHOSH

Viśākha Datta was the author of the reputed Sanskrit drama *Mudrārāksasam*. He was the son of Mahārāja Prithu, the grandson of Vaṭeśvara Datta, a feudatory chief (*sāmanta*). Nothing more can be known about him positively from his drama. Professor Bidhubhusan Goswami considers him to be an inhabitant of the Northern India. He, in the introduction to his edition of the drama, writes :—“ The poet Viśākha Datta or Viśākha Dēva, as he is called in some editions, was in all probability a native of Northern India ; the geographical references in the drama, all except one, point to places situated in Northern India. The last verse referring to the Varāha Avatāra of Viṣṇu read and interpreted in the light of the fact that temples and remains connected with the Varāha-Avatāra are to be frequently met with in Northern India. And the very name of the dramatist and that of his grandfather, the former probably adopted in honour of the god Kārtikēya, whose temple in Devagir (Deogoda) was highly famous in earlier times, and the latter perhaps adopted in honour of the phallic image of Śiva situated near the Akṣayaṇī (or the imperishable banyan tree) on the confluence of the Ganges and the Jamunā suggest the same conclusion. All this, however, is probable hypothesis and stands in need of confirmation.”

The points gathered from the internal evidence and referred to above, can all be traced to Northern Bengal. Nay, we can add some more. If the above evidence is considered sufficient to call him an inhabitant of Northern India, we think, we have better grounds for claiming him to be a native of Northern Bengal. We shall now show that the temples of Varāha-Avatāra and of god Kārtikēya were in existence in Northern Bengal from very early times. The Vaṭeśvara Śiva is still in existence.

Temple of Varāha-Avatāra—in the copper-plate grants of the fifth and the sixth centuries A.C., discovered at Dāmōdarapura of the district of Dinajpur in Northern Bengal we find that lands were granted for the erection and the maintenance of the temples of Kokāmukha-Svāmī and Svēta-varāha-Svāmī in Dōngāgrāma in Himavacchikhara (the Himalayas). The grants were issued from the Kōṭivarṣa *adhikarāṇa* of the Puṇḍravardhana *bhūkti*, which are situated in Bengal. The find-spot of the grants is also in Bengal. We may,

therefore, conclude that these temples were in Bengal (*Ep. Ind.*, Vol. XV).

Kōkāmukha tirtha or Kōkāmukha kṣētra, a place of pilgrimage sacred to the Varāha-Avatāra, is mentioned in the Mahābhārata (Vana-parvva, chap. 84. and Anuśāsana-parvva, chap. 25), Varāha-Purāṇa (chaps. 113, 122 and 140) and Brahma-Purāṇa (chaps. 219 and 229). It is stated in chapter 122 of the Varāha-Purāṇa that once a Śaka prince of Ānandapura with his wife, a princess of Candrapura, accompanied by merchants, citizens, vaiśyas and lovely ladies made a pilgrimage to the Kōkāmukha. They reached the place after undergoing a fatiguing journey for many days. This Ānandapura, we believe, is modern Vaḍanagara, also called Nagara, which was the original home of the Nāgara-Brahmaṇas of Gujrat. This shows that the tirtha was well-known throughout India, so that people from distant Gujrat came to pay a visit to this place. In chapter 140 have been described the principal places of the tirtha, which comprised five yōjanas. Among the places mentioned are the rivers Kauśiki, Kōkāmukha and the Trisrōtā. All these rivers are in Northern Bengal, answering to the modern names of Kōśi, Kañkai and the Tistā. In chapter 219 of the Brahma-Purāṇa we find that the Varāha-Avatāra after rescuing the Pitris from the perils of the Rākṣasas performed śrāddha in Kōkāmukha-kṣētra, and that the goddess Earth bore to Varāha Avatāra a son named Narakāsura, who was given the kingdom of Prāgyōtisapura or Kāmarūpa, the modern Assam. According to Kālikā-Purāṇa Narakāsura was brought up by king Janaka of Mithilā. All these go to show that Kōkāmukha-kṣētra lay within Mithilā and Kāmarūpa, *i.e.*, in North Bengal. Kōkāmukha-svāmī, the presiding deity of the Kōkāmukha-kṣētra, is none other than the Varāha-Avatāra. This kṣētra is named after the river Kōkā at the foot of the Himālaya. The Varāha-Avatāra said :—

“ Kōkā-nad-iti vikhyātā giri-rāja-samāśritā ।

Tirtha-kōti-mahāpunyā madrūpa-paripālītā ॥ 106 ॥

Asyām-adya pravṛiti vai nivatsyāmy-agma-nāśakrit ।

Varāha-darśanam puṇyam pūjanam bhukti-muktidam

[॥ 107 ॥

(Brahma-Purāṇa, chap. 219).

Kārtikēya Temple—In Rāja-Taraṅgiṇī, the history of Kashmir, by Kalhana, is stated that King Jayāpīḍa (772-806 A.C.) came to Gauda and saw a temple of Kārtikēya in Paundra-varḍhana, the capital of the country.

“ Maṇḍalēsu narēndrāṇam payōdānām-iv-āryyam ।

Gauda-rājāśrayam guptaṁ Jayant-ākhyēna bhūbhujā ॥

Pravivēśa kramēṇ-ātha nagaram Paundra-varḍhanam ।

Tasmin saurājya-ramyābhiḥ pritaḥ paura-vibhūtibhiḥ ॥

Lāsyam sa-draṣṭum-aviśat Kārtikēya-nikētanam ।
Bharat-ānugamālakṣya nṛitya-gīt-ādi-śāstravit ॥

(Rāja-Taraṅgiṇī 4-419)

The Karatōyā is a very ancient river in North Bengal. Mentions of Karatōyā are found in the Mahābhārata (Vana-parvva, chap. 85; Bhīṣma-parvva, chap. 9). In 'Karatōyā-māhātmya' (an account of the merits of the river Karatōyā) we also find mention of a temple of Skanda or Kārtikēya in Paundra-vardhanapura:—

“Skand-ādi Viṣṇu-Balabhadra-Śiv-ādi-dēvair-adhyūṣitam
kara-jālām-vu-vidhūta-pāpam Śrī-Paundra-vardhana-puram
śirasā namāmi । 24 ”

Vatēśvara-Śiva—There is still a Śiva-liṅga called Vatēśvara-nātha at Colgong in the Bhagalpur district. It is a railway station on the loop line of the East Indian Railway. The place is not far from the border of the Birbhum district in Bengal. The fort of Garhi near it was looked upon, says Mr. Blochmann, as the entrance or key, to Bengal—a position which Muhammadan historians compare with that of fort Sahwan on the Indus, the key of Sindh. (J.A.S.B., 1873, p. 322.). Rai Saheb Nagēndranātha Vāsu says that the liṅga perpetuates the memory of Vatēśvara Mitra, an Uttara Rādhiya Kāyastha, who gave his daughter in marriage with the Mahārāja Vallāla Sēna and was made the governor of Magadha. But he has not given any reason for his thinking so. It is not unlikely that the liṅga has been in existence from a long time past (J.P.A.S.B., 1909, p. 10).

We have shown that all the reasons given by Professor Goswami were in existence in Bengal. We shall now add some more to show that it is more probable that Viśākha Datta was a native of Bengal. The names of the three generations viz. Viśākha, Prithu and Vatēśvara sound more like Bengali names than those of the people of other provinces of India. We have already mentioned the name, Vatēśvara Mitra. We find the name of a 'Vatēśvara Śarmā' in the Manahali copper-plate grant of king Madana-Pāladēva of Bengal. (J.A.S.B., 1900, p. 72). The name of Prithu is, perhaps, a contraction of Prithvidhara or of some such name with Prithvi as the prefix. This name is not un-common in Bengal.

Viśākha Datta's grandfather was a feudatory king. Feudatory kings with the surname of 'Datta' were very common in Bengal from the fifth century A.C. In the Dāmōdarapura copper-plate grants we find the names of Uparika Cīrāta Datta, Uparika Mahārāja Brahma Datta and Uparika Mahārāja Jaya Datta, who were all feudatory chiefs of Pundravardhana under the Guptas. In the Ghugrahāṭi copper-plate grants of the sixth century A.C. mentions have been made of Mahārāja Sthāṇu

The House of Tughlaq

(From the Tarikh-i-Mubarakshahi)

By K. K. BASU, T. N. J. College, Bhagalpur

ACCOUNT OF SULTAN LĀ 'AZAM ABU MUZAFFAR SULTAN
FĪROZ SHAH, May God bless his sepulchre!

He was the son of *Sipehdār* Rajab, the younger brother of Sultan Ghāzī Ghīāsud-dīn Tughlaq Shah. When the Holy and the Great God, munificent in gifts and bestower of sovereignty, conferred kingship upon this Emperor (Firoz Shah), of habits angelic and qualities Muhammad-like, gentle, kind and just, every act of oppression, tyranny, highhandedness, violence and excesses that had been manifest in the reign of the deceased Sultan Muhammad Tughlaq, was substituted for justice and equity, the adornment and exaltation of the country, and the safety of the roads. There was an abundance of learning (in the country), and a great many theologians and holy persons appeared (in his reign).

On the 23rd Muharram¹ of the above year (752 H., 1351 A.D.) he (Firoz Shah) ascended the throne on the bank of the Sindh.² People flocked to his court from all sides; the chiefs and the nobles, fully and wholeheartedly, acknowledged his authority and approved of his actions.³

The Sultan drew up his forces as usual,⁴ and having made up his mind to proceed to Delhi on the following day arranged his troops. On that day the Mughals, who had come in (Sultan's) aid, having joined themselves with Nauroz Gurgin, fell upon the royalists.⁵ A firmān was issued ordering that the baggage-train should be carried forward

¹ Afif, Zia Barni and Nizamuddin write 24th Muharram.² On the demise of Muhammad Tughlaq the army that had been led by him to Thatta fell into utmost disorder, and was assailed by the Mughals in front and the rebels of Thatta in the rear. As there was no one possessing the ability to redeem the soldiers from the hands of the Mughals, the chief men of the army entreated Firoz to ascend the throne.³ بیعت عام کردند و موافقت نمودند⁴ برسم طویل فرود آورد⁵ MS. reads—همان روز مغلان که برای مود آموه بودند باشتغال نوروز

کده کر. (?) صفها کشیر اتفاق جنگ کردند *

Datta and Antaraṅga-uparika Jīva Datta. (J.P.A.S.B. 1911) Lastly some identify Gaṇeśa Datta-khān, an Uttara-Rādhīya Kāyastha of Dinajpur in North Bengal with Mahārājā Gaṇeśa who became an independent king of Bengal in the beginning of the fifteenth century A.C. The mahārājās of Dinajpur are said to be the descendants of this Datta dynasty.

In some manuscripts of the Mudrā-Rākṣasa, the reading of Avantivarmā has been found in the last line of the last ślōka in place of Candragupta. Prof. Goswami thinks that this Avantivarmā might be the father of Grahavarmā, the brother-in-law of Mahārāja Harsavardhana. He supposes that this Avantivarmā had perhaps the kingdom of the western Magadha under him and was the overlord of Viśākha Datta. He perhaps, with a view to please his overlord, put Avantivarmā's name in place of Candragupta. Professor Goswami assigns the time of the Mudrā-Rākṣasa to the latter part of the seventh century or the beginning of the eighth century A.C. But Grahavarmā succeeded his father and was killed at about (605 A.C.). His father Avantivarmā can not, therefore, be present towards the end of the seventh century or the first part of the eighth century. We shall, therefore, have to find out some other Avantivarmā, who was present towards the end of the seventh century or the beginning of the eighth century. Another Avantivarmā was the king of Kasmir, a great patron of learning, but he had no dominions in Northern India or in Bengal. Besides he reigned in the latter part of the ninth century (855-883 A.C.). Who this Avantivarmā might then be? Although the history is silent about any descendant of Bhāskara Varman of Kāmarūpa, the reference to the Varāha Avatāra leads us to think that this Avantivarmā might be the immediate descendant of Bhāskara Varman, who claimed his descent from the Varāha Avatāra. That Bhāskara Varman had his sway over the northern Bengal is evidenced by the fact that he had issued his Nidhanapur copper-plates grant from his victorious camp at Karna-suvarṇa in Bengal, (*Ep. Ind.*, Vol. XII).

In the first act of the Mudrā-Rākṣasa we find that Nipuna-ka, the spy of Cāṇakya, adopted the disguise of a showman of Yamapata, a scroll depicting the punishments awarded by Yama, the god of death, to the different kinds of sinners. The profession of earning money by showing Yamapata is still followed in the district of Birbhum in Bengal. Mr. Gourahari Mitra wrote in the Bengali magazine 'Pravāsi' of the month of Āśvina last, that the paṭuās (painters) of Birbhum prepare a scroll of about 25 to 30 cubits long by giving a thin coating of mud on cloth. On it is pasted paper depicting the exploits of Rāma and Kṛṣṇa, society sketches and scenes from hell (yamā-laya) showing the tortures of the sinners. They earn their livelihood by showing these pictures to the villagers and explaining them by singing songs of their own composition. In this

way they impart secular and religious instructions to the people. An account of the exhibition of 'Yamapata' also can be found in Bāṇa's *Harsa-carita*. (Cowell and Thomas pp. 119 and 136). This shows that the practice of earning money by exhibition of 'Yamapata' was much prevalent in the seventh century *i.e.*, when Viśākha Datta lived.

Until no evidence to the contrary is forthcoming, we hope, we shall not be wrong to claim Viśākha Datta to be a Bengali.

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along the river Sindh with forces on both its sides. When the Mughals appeared they were put to distress by the imperialists, and the latter made a further advance.

Defeat of the Mughals.

Being defeated the Mughals retired to their countries. The Sultan by continuous marches arrived at Siwis-tān and recited the *Khutbā*¹ in his name on Friday.

It was during this expedition that Malik Ibrahim obtained the office of *Naib-i-bārbeg*; Malik Mashira² was invested with the post of 'Ariz (-i-Mulk) and he received the title of 'Imādu-l Mulk. From that place was sent Kamru-d-din, the Secretary of late

Conferment of presents on the members of the court at Siwis-tān.

Maliku-sh Shark Malik Kabir, to Guzarat, the country of Bahram Ghaznin. Malik Noor,³ the *Sar-dawat dar*,⁴ Malik Nua, Sheikh Hasan Sarbarhanah and other Maliks who remained there were rewarded with special robe of honour and excessive favours. Said 'Alauddin Rasuldar and Malik Saifuddīn, the Superintendent of the elephants were sent against Khwaja Jehan at Delhi. Moulānā 'Imād and Malik 'Ali Ghori were deputed against Taghi, the chief of Sindh and Thatta. Other officers marched against Khudawand Zādā Kawāmu-d-dīn and 'Ainu-l Mulk at Multan; and some against Malik Mahmud Beg at Sannam, and some to other districts and towns. A general firmān was issued to the various parts of the Kingdom granting compassion, favour and education to the subjects. The Goffin of Sultan Muhammad was placed on an elephant with the royal umbrella over it, and taken to Delhi with successive marches.

In order to convey the news relating to the demise of Sultan Muhammad, Malih, a slave of Khwāja Jahān, set out (from Thatta?) on the third day, and reaching the city (Delhi) carried the intelligence to his master.⁵ Struck with wonder, and without careful investiga-

Khwāja Jahān sets up the son of the late Sultan Muhammad Shah, 3 Safar 752 H.

Nizamuddin gives a more detailed account in his *Tabaqat-i-Akbari*. He relates that after the death of Muh. Tughlaq when confusion overtook the army, Malik Firoz considered it advisable that he should * * separate the 3,000 Mughal horsemen, whom Amir Kazghan had sent to assist Sultan Muhammad, from the main army, so that it might be saved from their depredations. * * * Two days after Sultan Muhammad's death Nauroz Gurgin, the son-in-law of Barmah Shirin, who had been brought up by Sultan Muhammad, ungratefully joined the Mughals, and incited the latter to stretch their hands to ravage * * *.

¹ *Khutba* or *Khutbet*, the two synonymous terms refer to the oration delivered every Friday after the afternoon service, in the principal Mahomedan mosques in praise of God, the Prophet and his descendants. This was pronounced in former times by the reigning Khalif, or the heir-apparent.

² Afif reads شیدا برو حشم (Bib. Ind., p. 48). Elliot (III, 277) has Shirābrū chasm.

³ MS. illegible.

⁴ Keeper of the seals.

⁵ Afif narrates that a slave named Malik Tūntun (Zia Barni

tion or consideration, *Khawāja Jahān* brought out a youth of obscure origin,¹ describing him as a son of Sultan Muhammad Shah. With the consent of *amirs* and *maliks* of Delhi, he placed him on the throne, on the 3rd Safar of the afore said year, under the designation of Sultan *Ghiyāsud-din* Muhmud, and himself managed the affairs of the Kingdom. Saiyid Rasuldar and Malik Saifud-din reached Delhi and showed the auspicious firmān of the Emperor (Firoz Shah) to them (*Khawāja Jahān* and his associates). As *Khawāja Jahān* had undertaken the work without any proper thought, he perforce, persevered in his actions. Some of the *amirs* and *maliks*, such as, Malik Natho, the chamberlain, Aāzam-i-mulk Hisāmuddin, Sheikh-Zādā Bustāmī, Malik Hāsan Multani, and Malik Hisāmuddin co-operated with him; while others, e.g., Sharfu-l Mulk, Malik Zablan, Amir Kutba'h, Malik Khaljin, Malik Hasan, *Amir-i-miran*, Kāzi Mir, *Khawāja Bahaud-din* Thikra, Malik Muntakhab Balkhi, Malik Badrud-din Naubāhārī secretly sent petitions expressing terms of sincerity to the Emperor, may God exalt him! *Khawāja Jahān* invited Mahmud Beg from Sannam, but the latter showed his negligence, and sent a petition guaranteeing help to the King (Firoz Shah). Letters had also been despatched to Khudawand-zādā Tarmud and 'Ainu-l Mulk at Multan, but they transmitted this letter of *Khawāja Jahān* to the Emperor, who (thus) became apprised of *Khawāja Jahān's* enmity. Khudāwand-zādā and 'Ainu-l Mulk were honoured with compassion and special presents from the King for their having joined the imperialist cause.

Learning that the King was approaching against him with continuous marches, and that a large number of men had flocked to his standard, *Khawāja Jahān* sent as messengers, Saiyid Jalālu-d-din Karmati,² Malik Dhilan,³ Moulānā Nazmud-din Rāzī, Daud, and Moulānā Zādā⁴ (for the purpose of explaining to Firoz Shah) that the empire was still in possession of Sultan Muhammad's family; that Firoz Shah should accept the office of deputy and the heirship and devote himself with energy to the performance of the affairs of the empire; and further that, he (Firoz) might choose some of the *ikta's* of Hindustan, and any noble whom he might select could join him.

Altun) had been sent from Delhi by *Khawāja Jahān* to Sultan Muhammad (at Thatta?) and just on the Sultan's death, he started on his return journey to Delhi.

¹ Sir Wolsey Haig is of opinion that there is much to justify the belief that the child was Muhammad's son and that the allegation that he was not was an attempt by panegyrists to improve their patron's feeble hereditary title. *Cambridge History of India*, III, 174: *Journal Royal Asiatic Society*, July, 1922.

² MS. illegible. T.A. (for *Tabaqat-i-Akbari*), (Bib. Ind.), 242, Sayyad Jalāl.

³ MS. reads *جیلان*: T.A. (*ibid.*), 242, Malik Dhilan.

⁴ T.A. (*ibid.*) has "his own Moulānā Zādā."

On the arrival of the afore-said embassy, Firoz placed it under guard, and summoning together the chief of the Sheikhs, Kutubu-l Aulia Nasiru-l Huq-u-Shara'au-d-din,¹ *may God have mercy on him*, Moulānā Kamālu-d-din Sāmāna and Moulānā Shamsu-d-din Bākharzī² explained to them thus, "Thou dost all know how I was the favourite of the late Sultan, and further, thou must have heard how Khwāja Jahān has placed on the throne a young lad as the *soi-disant* son of Sultan Muhammad; if the late Sultan had any issue left I might have been in the know, and if he had any son he must have had placed him under my guardianship, for, none was a better patron or a friend of his than I. Him (the false heir) has the Khwāja placed on the throne and the people of Delhi have accepted him as their ruler." In conclusion the Sultan enquired, "What in your opinion is the exigency of the hour, what do you advise me to do, and what is the proper step to be taken (now)?" Thus replied Moulānā Kamāluddīn, "Whoever has undertaken the duties of the empire ever since the beginning has the priority of claim, and he is the sovereign."

The emissaries who had arrived, such as, Saiyid Jalālud-din Karmati, Moulānā Nazmud-din Rāzī and Malik Dhilan remained near Firoz Shah, while (Sheikh) Daud and Moulānā Zādā returned to Khwāja Jahān. A firmān was issued stating that if Khwāja remembers his obligations to the Sultan for the latter's having conferred upon him the favours and his past services, he would do well to give up his opposition caused by his foolishness and aberration and to betake himself to the path of obedience, as in that case, more favour would be shown to him and his faults and sins condoned. Returning to Delhi, (Sheikh) Daud brought the (above) firmān to Khwāja Jahān who, (notwithstanding the Emperor's attempt to bring about a reconciliation) increased his vigour, magnificence, strength and opulence; the people joined him from all sides.

Meanwhile Abu Muslim, Malik Shahin Beg, sons of Malik Mahmud Beg came to the Sultan with their petitions and presents, and were favoured with (royal) compassion. When the Emperor arrived at Sarsuti,³ Malik Kawamu-d-din⁴ arming himself came out of Delhi at the time for the meridian prayers, on Thursday, the last day of Jamadiu-l-akhir of the same year, with his equipage, attendants and harem, and sought refuge from the Emperor. Amir Mu'aazm Kutbgha, too, joined Kawamu-d-din, and his couriers came to the Sultan at Fatha-

¹ T.A. reads Sheikh Nasirud-din Muhammad Auhdi.

² MS. reads اخذنى: T.A. reads Bākharzī.

³ "It is 90 Kos from Delhi," Aff; In the course of his progress from Thatta to Delhi, Sultan Firoz Shah took the route by Dīpalpur, Multan, Ajodhan and Sarsuti.

⁴ Kiwamu-l Mulk, Aff (Ell. III, 283); He was also called Malik Maq-

bād¹ on the same day. It was here (Sarsuti) that tidings arrived of the birth of Shahzādā Fath Khān, and the news of the death of Taghi (also) reached him (the Sultan) there from Guzarat. On the day following, as Kiwāmu-l Mulk had come out, Khawāja Jahān, of necessity, went near the Sultan, and alighting himself at *Hauz-i Khass*² appeared with the adherents before the Sultan at Hansi, and stood concealed before the assembly with turbans round their neck.³ The Emperor ordered that Ahmad Ayaz (Khawāja Jahān) should be made over to the *Kotwāl* of Hānsī,⁴ and Malik (Ghijasu-d-dīn) Khitaḥ should be conveyed to Tabarhind;⁵ Nathu, the chamberlain, was exiled to Sannām, and Sheikh-Zādā Bustāmī was ordered to leave the country. Hisāmud-dīn (Uzbek)⁶ was kept detained by the general of the army.

In the month of Rajab of the aforesaid year (752 H., September 1351, A.D.) the Sultan entered Firoz's arrival at Delhi and his accession. Delhi. The people welcomed him, and received royal favour (in return). At the fortunate aspect of the stars, the Emperor alighted at the palace of Khātūn on the 2nd Rajab (August 1351, A.D.) and engaged himself in carrying the administration of the state and looking after its welfare.⁷

In the same month (Rajab, 752, H.⁸) Firoz Shah marched towards the Sirmur⁹ (hills), and after a lapse of four months he came back to Delhi.

bul. He was the ablest noble in the Kingdom, and was a Brahman of Telingana who had accepted Islam.

¹ Fathabad was the name given to the newly constructed city at the site of Ikdār where the crown-Prince Fath Khān was born. Elliot III, 283.

² Aff, *Hauz-i-Khās-i-'Alā*.

³ Aff writes, "Khawāja went into his presence with a chain around his neck, his turban off, a *talika* on his head, and a naked sword fastened to his throat, and took his standing low down among the attendants."

⁴ *Tabakat-i-Akbari* (Bib. Ind., 243). Badaoni (*ibid.*, 243), and Firishta (Briggs I, 448) agree in saying that Khawāja Jahān should be made over to the *Kotwāl* of Hānsī, whereas, Aff describes how the Emperor wished to re-instate Khawāja as *Vazīr*. At length, Sūmāna was assigned to him in *in'ām*, and when he had set out for that place he was beheaded by Sher Khan.

⁵ The boy whom Khawāja Jahān had proclaimed as Sultan.

⁶ MS. unintelligible.

⁷ Aff writes, "The Sultan conciliated his subjects by remitting all debts due to the State; reduced the demand on account of land revenue; abolished levying of benevolences and the vexatious cesses; appeased with gifts the heirs of those who had been executed in the late reign, etc. etc."

⁸ Badaoni gives 753 H., T.A. gives 5th Safar, 753 H., Firishta writes 5th Safar, 754 H. The Sultan went there for excursion and sports.

⁹ In the Punjab, bet. 30' 20' and 31° 5' N. and 77° 5' and 77° 55' E. on the west bank of the Jamuna and south of Simla.

On Monday, the 3rd Jamadiu-l awwal,¹ of the year, Prince Muhammad Khan² was born. When this joyful and happy tidings and auspicious news was conveyed to His Majesty, he signalised the birth of the prince with feasts and rejoicings. This prince was born during the period of the Sultan's sovereignty, and from the day of his birth the prosperity and splendour of the empire were on the increase.

Upon the whole, a few months later, of the year, His Majesty marched towards Kalānor, and hunting in Makh Jahur retraced his way to Delhi.

The same year the Sultan laid the foundation of the Jami'a mosque near the palace and a madrasa on the *hauz-i khāss*!³ He conferred the title of *Sheikh-ul-Islām* on Sheikh-Zādā Sadruddīn,⁴ grandson of Sheikh Kabir Kutubu-l Auliau-l Huq wa Shar'au-d-dīn Zakariah, may God have mercy on him; Kawāmu-l Mulk Malik Maqbul, the Nāib Vizier, was made the Vizier, and was honoured with the designation of *Khān-i-Jahān*; he, further, received a diploma and a gold casket. Khudāwand Zādā Kawāmu-d-dīn received the title of Khudāwand Khān and became the Vakildar; Malik Tātār became Tātār Khān; each *amir* obtained different kinds of umbrellas; *Maliku-sh Shark* Sharafu-l-Mulk was made Naib Vakildar; Khudāwand Saifu-l Mulk the Shikārbeg: Khudāwand-zādā 'Imadu-l-Mulk the chief Silāhdar; 'Ainu-l Mulk received the post of Musharrif of the countries.⁵

In the month of Shawwāl, in the year 754 H. (December 1553 A.D.), the Sultan started with a large army on an expedition to Lakhnauti.⁶ Leaving Khān-i-Jahān in charge of the State, great and small, the Sultan with continuous

¹ Badaoni gives the date, Rajab 753 H.

² Later known as Nasirud-dīn Muhammad Shah.

³ Nizamuddin, Firishta and Badaoni simply write, "the Sultan laid the foundation of lofty edifices on the bank of the Sarsuti."

⁴ Badaoni calls him Sheikh Sadrud-dīn Multāni, and says that the lofty building built on the bank of Sarsuti was given to Sadruddīn.

⁵ Nizamuddin says that 'Ainu-l Mulk received the post of *Mustaufi* and *Musharrif of the Diwān*.

⁶ In 1345 Hājī Iliyās, styling himself Shamsu-d-dīn Iliyās Shāh had made himself master of W. Bengal, and after having overthrown Ikhti-yāru-d-dīn Ghāzī Shāh, the ruler of E. Bengal in 1352, established his dominion over the whole of Bengal. The proclamation that was issued by Firuz Shah in 1353 A.D. explained the cause of the invasion to be the wrongs and oppressions of Hājī Iliyās. See *J.P.A.S.B.*, XIX, 1923, No. 7, pp. 253-290.

marches reached his destination.¹ On the King's arrival in the neighbourhood of Gorakhpur, Udaya Singh waited upon him, and having presented a *lac* of tankas and two elephants became the recipient of imperial favour.²

On the 7th Rabi'ul Awwal,³ the Sultan arrived at the fort of Ikdāla,⁴ and there was a great battle. The Bengalis were slain, and the casualty was very great. Shahdeo,⁵ their chief, with several others was killed on that day. On the 29th of the month, the Sultan left the place, and encamped on the bank of the Ganges. Iliyās Hāji took refuge in the fort (of Ikdāla), and on the 5th Rabi'ul Ākhir, he marched out at the time for the meridian prayers with his equipage, attendants, and countless Bengalis.

The Sultan drew up in order of battle, and immediately as Hāji perceived it, he was alarmed and fled.⁶ The imperialists made a hot pursuit and laid their hands upon the canopy and forty-four elephants: and a large number of Iliyās' horse and foot was made food for the sword. The Sultan halted there for two days,⁷ and on the third day, he made his way to Delhi.⁸ Some months afterwards, His Majesty laid the foundation of the City of Firozābād,⁹ May Allah protect it from all evils!

¹ Afī writes, "the Sultan followed by way of Champaran and Rachap:" Barni says, "the march was through Gorakhpur, Kharosa, and Tirhut.

² Nizamuddin writes, "Ray Kapur, also, paid the tribute of several years, and both of them (Kapur and Udaya Singh) joined the army.

³ MS. reads 28th Rabi'ul Awwal. Firishta (Brigg. I, 449) and Nizamuddin (Bib. Ind., p. 245) write 7th Rabi'ul Awwal. We have adopted the latter version.

⁴ Iliyās who had rashly invaded Tirhut with the object of annexing the s. eastern dists. of the Kingdom of Delhi, retired, at the approach of Firoz, to his own capital Pandua, and thence to Ikdāla.

Westmacott, in *Calcutta Review* (July, 1874) places Ekdalah (Akda-lah) some 42, m. on the Maldah side of the river Tangan and North of Gaur and Lakhnauti. Major Raverty (Tabakat Nasiri, Bib. Ind., p. 591, f.n.) identifies Akdalah with Damduma, a corruption of Damdamah, in the pergh. of Debekote, between Lakhnauti and Dinajpur. Wolsey Haig places Ikdāla on the island in the Brahmaputra (*Cambridge Hist. of Ind.*, III, p. 176).

⁵ There is no mention of Shahdeo in Nizamuddin, Badaoni, Firishta, and Afī.

⁶ A detailed account of the battle has been given by Afī.

⁷ Afī says that, the new names which the Sultan gave to Ikdāla and Pandwah were Azādpur and Firozabad respectively.

⁸ "The rains having commenced, Firoz Shah had to abandon the investment, came to terms with Iliyās and retired towards his own dominions by the Manickpur ferry." Afī.

⁹ The Sultan returned to Delhi on the 12th shaābān 756 H. (July 12, 1355 A.D.).

This Firozābād was different from its name-sake which arose from

In the year 756 H. (1355 A.D.) the Emperor went¹ in the direction of Dipalpur, and excavating a canal from the Sutlej² took it to Jhajhar,³ a distance of 48 Karohs. The next year,

he excavated a canal from the river Jun in the vicinity of Mandal⁴ and Sarmur;⁵ and uniting seven other canals with it, took it as far as Hansy.⁶ From that place he extended it to Alisin,⁷ and there laying the foundation of a strong fort, gave it the name of Hisar Firozā.⁸ Below the Kiosk an extensive reservoir was constructed which was filled up with water from that channel. Another canal was excavated from the Khakhar (Ghaggar), and conducting it past the fort of Sarsuti was taken to Harni-Khirah.⁹ In between these canals he (the Emperor) erected a fort, and called it Firozabad. Another aqueduct was drawn from Badmani¹⁰ and conveyed to Jaun, thence to

the change of name of Pandūah. This new town situated on the banks of the Jumna, occupied the sites of the old town of Indarpat and 11 other villages or hamlets, and contained no fewer than 8 large mosques.

¹ "Went to hunt," T.A. (*ibid.*, 245).

² T.A. "Satlad"; Firishta, "Sutloog."

³ Badaoni, "Jahjar"; Firishta, "Kugur". Jhajjar, a town within 40 m. of Delhi, in the Rohtak dist. Punjab.

⁴ MS. منوئی: Firishta, "Mundvy"; Badaoni, Mandūi or Mandilī; T.A. "Mandal"; Elliot, "Mandatī." Mandawi a village in Karnal dist. Punjab, on the route from Hansi to Ludhiyana, and 51 m. north of the former town. It is situated on the left bank of the Gaggar. Distant N.W. from Cal. 1027 m. Lat. 29° 48', Long. 76° 3'.

⁵ Badaoni, "Sarūr,"; Firishta, "Surmore"; T.A. "Sarmur."

⁶ Hissar dist. Punjab, Lat. 29° 6' 19". Long. 76° 0' 19".

⁷ MS. اراسنی: Elliot, "Araman"; T.A., "Alisin." Badaoni, Rās Firishta, "Raiseen"; Afif, "Laras."

⁸ The foundation of Hissar was laid on the sites of two villages, Larās-i-Buzurg and Larās-i-Khurḍ.

The city and the fortress stood in the midst of a sandy desert, and was ill-supplied with water. It was to remedy this defect in the city which Firoz proposed to build here, that he caused canals to be drawn to it.

The western Jamuna canal, an important perennial irrigation work in the Punjab, taking off from the west bank of the Jamuna and irrigating Ambāla, Karnal, Hissar, Rohtak, Delhi Dists., and parts of Patiala and Jind was originated by Firoz Shah who utilized the torrent bed known as the *Chautang* to conduct water to the royal gardens at Hissar and Hansi. But after 100 years its water ceased to flow farther than the lands of Kaithal, and Akber re-excavated the work of Firoz in 1568. In the reign of Shah Jehan, his engineer, Ali Mardan Khan, undertook a more ambitious scheme, and took the water through Panipat and Sonapat to Delhi.

⁹ Elliot, "Harbi Khira" or Harī Khirā: T.A. (245) "Karah" Badaoni, "Harnī Khirā"; Firishta (Brigg: 449) "Pery Kehra" Iswari Pd. Mediæval India, "Hari Khirā" or "Bherni-khera." Renell says (p. 73) after the meeting of the Setledge and the Beyah, the name of Setledge is no more heard of (above Multan at least,) that of *Kerah* being the name of the confluent waters."

¹⁰ T.A. (*ibid.*, 245). "Budhi" (river): no reference of this either in Firishta or Badaoni.

Firozah, and into a reservoir, and further to a point beyond it.¹

In the month of Zilhijjah (January) of the same year (757 H., 1356 A.D.), on the day of 'Id-uz-hia,² a robe of honour and a diploma³ arrived from the Khalifa Al-Hakim bi amrillāhi Abū Fath Abū Bakr ibn Abī Rabi' Suleimān, the Khalif of Egypt,⁴ confirming the committal of the countries of Hind.⁵

*** The same year, there also came the plenipotentiaries from Iliyās Hāji of Lakhnauti with valuable presents. They became the recipient of excessive favours and endless affections, after which they returned. On another occasion, there (again) came presents from Iliyās Hāji, and (the envoys) kissed the royal feet at Hissar Firozah. Thus the Sultan addressed them, "My humble servants possess better effects than those that you have brought here: henceforth, you should bring such picked elephants which a King should present to a brother King".

In the year 758 H. (1358 A.D.) Zafar Khān Fāzri⁶ came from Sonārgāon * * (with two elephants and attached himself to the court. He was received with favour and received the office of Naib Vizier).⁷

¹ Aff is very concise in his statement of Firoz's canals, and refers only to the two canals, the one from the Jamuna to the city (Hissar Firoza?) and the other from the Sutlej to the above place, the former called *Rajivah* and the latter *Alagh-Khānī*, and both passing through Karnal. Being an inhabitant of Sirhind, and probably possessing more geographical knowledge of the Canals, Yahya has given an account of the canals with greater detail. The later historians, such as, Nizamuddin, Firishhta, and Badaoni have followed Yahya.

² عيد الضحى an error for عيد مصحبه.

³ منشور an error for دشور.

⁴ MS. reads دار الخلافة و مصر Here و should be deleted.

⁵ Aff is reticent on this incident, whereas Nizamuddin (ibid., 245). Badaoni (ibid., 245), and Firishhta (ibid., 450) all agree with Yahya.

* * * Portion within the asterisk has been omitted in Elliot.

⁶ MS. reads. ظفر خان محمد بن فارسي. We have followed Nizamuddin. (ibid., 246). Firishhta (ibid., 450) writes Zafar Khan Farsy.

* * Here begins the most grievous error of the copyist of the MS. The transcription has been most wrongly done, e.g., Zafar's arrival from Sonārgāon is to be found in p. 146 of the MS. and the subsequent events have been narrated in the following order, pp. 156, 157, 158, 151, 152, 153, 154, 155, 148 (line 7), 149, 150, 145 (line 15), 146, 147, 148, 158 (line 2).

⁷ The MS. being not clear the bracketed portion has been taken from Nizamuddin. (T.A. ibid., 246). Badaoni makes no reference of this event: Aff, Yahya, Nizamuddin, and Firishhta are almost unanimous, and of these Aff is more elaborate. The latter gives in detail the circumstances that led to the arrival of Zafar Khan to seek the protection of

In Zilhijjah of the year 759 H. (1358 A.D.) the Sultan started towards Samāna, and there engaged himself in hunting.¹ Meanwhile there came advices that an army of Mughals had arrived on the frontier of Lahore. Malik Qabūl *Sarbardādān*²

(lord of the bed-chamber) was ordered to proceed with an army against them, but the enemy, before his arrival, retreated towards their own country. The Sultan returned to Delhi.

About the end of the year, Tajuddīn Betāh³ came from Lakhnauti with some other amirs as ambassadors, bringing with them articles as tribute, and were honoured with the royal favour.⁴ In return, the Sultan also sent Turkish and Arabian horses, fruits from Khorassan, and every kind of other presents

under the charge of Malik Saifuddīn, the keeper of the (royal) elephants, who accompanied Malik Tajuddīn to Sultan Shamsud-dīn at Lakhnauti. Arriving at Bihar (the party) learnt that Shamsud-dīn had expired, and that his son had become king under the title of Sultan Sikandar.⁵ The envoys from Lakhnauti were detained at Bihar, and the event was notified to the Emperor.

The Sultan ordered that the presents which had been sent to Sultan Shamsud-dīn should be brought back; the horses should be made over to the army at Bihar and the ambassador (from Lakhnauti) should be conducted to Karah. The firmān was carried out to the letter.⁶

In the year 760 H. (1359 A.D.) the Sultan marched towards Lakhnauti,⁷ leaving Khan-i-Jahan at Delhi, and after

Firoz Shah (*See Bib. Ind.*, p. 137 et seq. : Elliot, III. 303). After the murder of Sultan Fakhruddīn, King of Sonargaon, at the hands of Shamsuddin, Zafar Khān, the son-in-law of the deceased sovereign was sore distressed, and fled to Thatta and Delhi enroute Hissar Firozāh, to seek the protection of the Emperor.

¹ Aff has passed over this incident. But Nizamuddin, (T.A. *ibid.*, 246). Badaoni (*Bib Ind.*, 246 : Ranking I. 328), Firishta (*Brigg.* I. 451) all agree with Yahya.

² Aff, *Torabānd*.

³ T. A. simply Tajuddin : Badaoni and Firishta give no name,

⁴ There is no reference of Tajuddin's embassy in Aff. But Nizamuddin, Badaoni, and Firishta all agree with Yahya.

⁵ Firishta, "Sultan Shah Poorbea".

⁶ Aff (*Bib.*, Ind. 100-105; Elliot III. 290-92) narrates another event of importance which took place in 1358. Yahya, Nizamuddin, and Badaoni are all reticent. In 1358 Khudawand Zāda, the Emperor's cousin and her husband formed a plot against the life of Firoz Shah, but it was frustrated by her son. The cousin was imprisoned and her husband banished.

⁷ The Sultan, by his action, broke the sanctity of the treaty made with Sikandar's father, and invaded the dominions of his son on the frivolous ground of vindicating the rights of Zafar Khān.

deputing Tātār Khān to proceed from Ghaznīn to Multān.¹

Firoz Shah's second expedition to Lakhnauti.

Sultan,² brought a robe of honour from the Khalif of Egypt,

Arrival of a dress from the Egyptian Khalif.

and the Emperor being graciously disposed towards him, dubbed him, A'zam Khān.³ Saiyid *Rusuldār* was sent with the messengers of Lakhnauti to the Sultan Sikandar, and the latter despatched five elephants and other costly presents to the court with the Saiyid. Before the arrival of Saiyid *Rusuldār*, 'Alam Khan had come as an ambassador, and to him a firmān had been issued to the effect that the Sultan Sikandar was foolish and inexperienced and had strayed from the path of rectitude. The Emperor had, at first, no desire to draw the sword against him (Sikandar), but as the latter had not discharged the duties of obedience, he must now understand that His Majesty was marching against him. Firoz Shah, when the rains were over, shaped his course for Lakhnauti, and, while on the way, conferred the ensigns of royalty, such as elephants and a red pavilion, on Prince Fath Khān, and directed coins to be struck in his (Prince) name and officers⁴ to be appointed under him. When the Emperor arrived at Panduah,⁵ Sultan Sikandar shut himself up in the fort of Ikdāla, whither Shamsuddin, his father, had been in the habit of going for refuge. On the

Sikandar takes Shelter in Ikdāla.

16th. Jamadiul-awwal, 761 H., (5th. May, 1360,) the Emperor encamped at Ikdāla. When the seige had been continued for sometime, the garrison, perceiving the futility of their opposition to the assailants, capitulated in lieu of despatching elephants,⁶ treasures and goods as tribute. On the 20th. Jamadiul-awwal of the year, Firoz Shah marched out from Ikdāla on his return journey, and on his reaching Panduah, Sikandar made him a present of thirty-seven elephants and other valuable articles.

¹ The text in the MS. gives no sense. تاتار خان را از حد ولایت غزنین
Khan as *Shikkār* at Multan (to guard) the Ghazni frontier." We have followed Badaoni. (Raverty I. 328.)

² The fault being that he had become intimate with Ahmad Aiyāz.

³ Firishta, 'Azim-i-Moolk'.

⁴ Firishta writes "tutors".

⁵ Firishta, "Bundwa".

⁶ Firishta says, "that Sikandar sent 48 elephants. Badaoni writes, "thirty-seven elephants". Nizamuddin states, "the Sultan agreed to send a yearly tribute of elephants". Afif writes that on the conclusion of peace between Sikandar and Firoz Shah on condition that Zafar Khan

With continuous marches¹ His Majesty arrived at Jaunpur,²

The Emperor re- when the rains having commenced, he
turns via Jaunpur, Bi- quartered his army there. After the
har, and Jajnagar. expiry of that season, in the month of Zil-

hijjah of the same year, the Emperor
moved by way of Bihar to Jājnagar.³ A firmān was issued that
the baggage-animals, the women, the disabled horses, and the
old men should not proceed. He left Malik Kutbuddin, the
brother of Zafar khān, the Vizier, at Karra⁴ with elephants
and baggage, and hastened forward; on reaching Satgarh,⁵ he

plundered it, and its ruler⁶ fled. Shahr
Flight of the Rai of khātūn,⁷ daughter of the Rāi fell into the
Satgarh. Emperor's hands.⁸ The Emperor pro-

ceeded further, and left Imādu-l Mulk one stage behind with
some attendants and baggage. Ahmad Khān who had fled from
Lakhnauti, and had taken shelter in the fortress of Rantham-
bar,⁹ joined the Sultan and was honoured with great favours.

should be placed on the throne of Sonārgāon, the Emperor sent into the
fort of Ikḍāla a crown worth 80000 tankas, and 500 valuable Arab and Turki
horses with an expression of wish that henceforth they might never again
draw the sword. Sultan Sikandar, in his turn, sent 40 elephants and
other valuable presents.

¹ Aff says by way of "Qanaui and Oudh."

² Muslim historians derive the name *Jaunpur* or *Junān-pur* from
Jauna or Jaunān, the title by which Muhammad Tughlaq had been
known before his accession, but the City of Firoz was not the first site,
and Hindus derive the name from Jamadagni, a famous *rishi*.

³ Dr. Blochman in his "*contributions to the Geography and History
of Bengal*," identifies Jājnagar with Jajpur of the present day. Raverty
(*Tabakat Nasiri*, Tr. Bib. Ind. 588 f. n.) gives the following boundary
of Jājnagar: on the east, a range of hills forming the present W. boundary
of *Uḍisah-Jagnath*, Katāsīn (on N. or left bank of the Mahanadi, some
30 miles east of Boada, in about Lat. 20° 32' Long. 84° 50' being the
nearest frontier town or post towards Lakhnauti or portion of the Lakhna-
wati territory: further north, it was bounded towards the east by the
river called *Braminy* running to the W. of Gangpur. Its northern
boundary included Ratanpur and Sambalpur: on the west the river
Wana-Ganga and its feeder Kahan: on the south Gudawari, : S. W.
Talinganah.

⁴ T. A., "Karah Kantakh": Aff and Badaoni, Karra.

⁵ T. A. "Sankrah": "Firishta "Songhur": Badaoni, "Satgarh":
Elliot "Sikra": Raverty (*ibid.*) identifies the place with the
present Sirgoojah.

⁶ T. A., "Rai Sārbin": Firishta, "Rai Sidhun": Raverty, "Rai
Sāras" Aff, "Adāya".

⁷ Firishta also styles her *Shahr Khatun*, signifying "the Sweet
Lady". According to Raverty and Brigg "it is an impossible name for
a Hindu unless she became a convert to Islam, and was afterwards so
named".

⁸ Ms. reads. — شکر خان دختر رای سادغن بادایه بدست آمو Nizamud-
din writes. The Emperor called her (*Shahr Khatun*) "daughter" and
protected her: Raverty writes, "He called her daughter and adopted
her". Firishta is of same opinion: No reference in Aff.

⁹ Elliot, "Ranthor": Raverty (*ibid.* 591 f.n.) "Ratanpur, in Jhar-
Kundah."

The king thence proceeded to the city of Banāras,¹ the residence of the Rāi (of Jainagar) and crossed the Mahanadi.² The Rāi made his retreat towards Tilang.³ The Sultan made a day's

Flight of the Rai of Jainagar towards Tilang. Journey in his pursuit,⁴ but when it appeared that the Rāi had gone far in advance, he gave up the pursuit and commenced to hunt in the neighbourhood.⁵ Rāi Bir Bhān Deo,⁶ sent some persons to sue for peace,

Rāi Bir Bhān Deo Sues for peace. (and begged) that his subjects were not killed. The Emperor, as his wont, turned aside, and (the Rāi) sent thirty-three elephants and other valuable articles as tribute. From thence the Sultan fell back and hunted in Padmawati and Param Talāo, the grazing grounds of elephants. He killed two of them, and caught thirty-three alive. Zia-ul Mulk composed the following quatrain⁷ :—

The Shah, who with justice, to permanent power did attain,
Like the shining Sun, the environs of the world he held !
To Jainagar he came, the elephants to hunt ;
Two he killed, and three and thirty Captured he.⁸
From that place the Emperor came to Karah by successive
marches, and continuing his progress reached Delhi, laden
with victory, in Rajab. 762 H.⁹, (1361 A.D.).

After sometime, His Majesty learnt that in the vicinity of Bardār¹⁰ there was a hill of earth, out of which ran a stream that emptied into Satlad (Satlāz¹¹): it bore the name of Sarsuti. On the other side of the mound there was another stream called the Salima.¹² If the earthen dike were cut

¹ Affi, "Barānāsī": Badaoni (Bib. Ind.) Barūni: Ranking (ibid., 329) Barūnāsī: Nizamuddin Banāras: Affi states that there were two forts in Barūnāsī, each populated with a large number of people: the country was prosperous with the inhabitants and spacious houses and fine gardens.

² Badaoni, "Mahandūri": Affi "مهاندري": T. A. "Mahanadi":

³ Talinganah: T. A., and Badaoni read Tilang: Affi writes, "Rai fled to an island in the river." Firishta, "Tulingana".

⁴ Affi and Nizamuddin writes that the Sultan did not pursue the Rai. Badaoni agrees with Yahya: Firishta is also of the same opinion.

⁵ During the expedition against Jainagar the Sultan caused the idol of Jagannath to be rooted up and treated with every mark of indignity and then carried over to Delhi. Affi and Sirat i Firozshahi.

⁶ Firishta (Briggs. I. 452) Raja of Birbhoom: Badaoni, Rāi Parihān Deo: Elliot, Rāi Bir Bhandeo.

⁷ Nizamuddin and Badaoni both quote the quatrain.

⁸ The copyist has made a mistake in transcribing this quatrain.

⁹ Badaoni and Firishta give 762 H: Nizamuddin, 772 H. In course of their progress, the Imperialists lost their way and wandered for six months; numbers perished from hardship and privation.

¹⁰ Firishta, "Perwar": ¹¹ Badaoni.

¹² Nizamuddin "Aslima": Badaoni and Firishta "Salima":

through, the waters of the Sarsuti would fall into that stream (Salima) and (both) would flow through Sihrind, Mansurpur, and Sāmāna. The two streams were connected with each other, and it took sometime in cutting through the hill.¹ Sihrind and for ten *krohs* beyond was separated from Sāmāna, and put under the control of Malik Zīāu-l Mulk Shamsuddin Abū Rijā. A fort was built there and it was named Firozpur.

*** The Sultan from thence went to Nagarkot,² and after conquering it proceeded towards Thatta.³ At the time when the king reached Thatta, Jam and Bābiniya⁴ were in possession of the place. By dint of

The Sultan marched against Nagarkot and Thatta.

“Salima has received the modern name of *Khanpur Kee Nālā*” (Khanpur stream), Briggs (ibid.): “Salima” has been identified with Markanda, which rises near Nāhan and flows past Shāhabād, to the south of Ambala. “Cambridge Hist. of Ind., III. 179. Badaoni writes” *The Salima is also called the Sarsuti* and this river consists of two large streams which are always flowing, and situated between these two streams there is a high mound or dyke....” Nizamuddin’s description is similar.

¹ Nizamuddin, Badaoni, and Firishta write that 50000 spade-men were engaged for the purpose, and that inside the dike very large bones of men and elephants were found out: the bone of a man’s arm was 3 yds. in length.

*** Afif writes that “after the return from Laknauti, the Sultan went to Daulatabad upon a hunting expedition, and resting for a while at Biyana marched towards Nagarkot”.

Here the text in the MS. is not clear: چوں سلطان کائن کوہ مذکور قابل ندید.

² Its Raja submitted and met with royal treatment. The name Nagarkot was changed into Muhammadābād after the deceased Sultan Muhammad.

Afif contradicts the false statement made by the infidels that the Sultan went to see the idol *Jwālā Mukhi*, and held a golden umbrella over it. Firishta, on the authority of some historians say that the Sultan broke the idols of Nagarkot and mixing the pieces of cow’s flesh, filled bags with them, and caused them to be tied round the necks of Brahmins. Further, that, the Sultan ordered one of the books which treated of astronomy and found in the library at Jwalamukhy consisting of 1300 vols. to be translated in Persian by Izzudin Khāni under the title of *Dalāil i Firozshahi*: other books, translated in the name of Firoz, were the science of *Pīngal* (Music), *Pātūr Bāzi*, (dealing with *A’khāra* or an entertainment held at night and consists of singing and dancing by females).

³ The enforced retreat from Sind and the insolence of the Sindhis had rankled in the memory of Firuz ever since his accession. He set out for the country with 90,000 horse and 480 elephants, and collected on the Indus a large flat of boats which accompanied the army down stream to Thatta.

⁴ Firishta, “Jam Bany, the son of Jam Afra. Badaoni, simply Jam.” “Afif” Jam brother of Rāi Unar, and Babiniya, his brother’s son: Mir Masum (Tarikh i Masum, Ell. I. 226) calls him Jam Babiniya. The author of Tuhfatul Kiram (Ell. I. 342) who says that, Jam

great exertion the place was invested, and fighting went on for sometime, but provisions and forage becoming scarce, men died of hunger, so that of necessity and after a struggle, the Sultan was obliged to retire into Guzarat.¹ The

Guzarat was conferred upon Zafar Khān

fief of Guzarat was conferred on Zafar Khān and Nizamu-l Mulk, who having been dismissed² (from Guzarat) proceeded with a body of men to Delhi

where he was appointed Nāib Vizier of the state. After the rains when the Sultan reappeared before Thatta, Jam and Babiniya sought for quarter and waited upon His Majesty. They were taken into favour

The Sultan's reappearance at Thatta, and the submission of Jam and Babiniya.

and with all the chiefs of the country they accompanied the king to Delhi. On his having shown obedience, Jam was sent in state to resume his government.³

In the year 772 H. (1370-71 A.D.)⁴ Khān-i-Jahān, (the Vizier), died, and his eldest son Jūnā Shāh succeeded to his titles. The following year, Zafar Khān breathed his last in Guzarat and was succeeded by his eldest son⁵ in the fief. Then in the year 776 H. (1374-75 A.D.), on the 12 Safar, Prince Fath Khān died at Kanthur, for which, the Sultan was plunged into affliction, and his constitution received a manifest shock.

In the year 778 H. Shamsu-d-dīn Dāmaghāni offered	annually 40 lacs of tanks, 100 elephants,
Insurrection of Dāmaghāni	200 Arab horses, and 400 slaves, children of Hindu chiefs ⁶ and Abyssinians, over

Khairuddin was the chief of Thatta, is not to be preferred to Mir Masum. The ruler was Jam Māli, son of Jam Unar, and he was assisted in the government by his brother's son, Bābiniya. Cambridge Hist. of Ind., III, 180.

¹ "Where his troops might recruit their strength and replace their horses." C.H. I., III., 180.

Aff here describes how the Imperialists fell into the Kachi-ran (the Ran of Kach), how there were lamentations of the soldiery, and the anxiety of the Sultan, and finally how the supplies were sent by Khan-i-Jahan to the Sultan.

² As Nizamu-l Mulk had failed to send either guides or supplies to the Imperialists when they suffered during their course of progress in the Ran of Kach he was dismissed from his post,—the commandant at Guzarat.

³ Aff states that the son of Jam, and Tamachi, brother of Babiniya, were placed over Thatta and titles were conferred on them. The Sultan then marched for Delhi, taking Jam and Babiniya with all their establishment in his train. But Mir Masum, agreeing with Yahiya writes that Jam Babiniya after remaining in the Sultan's retinue for sometime was restored to the government of Sindh. The author of *Chachnamah* is also of similar opinion.

⁴ Firishta (ibid., 455) gives 774 H.: Badaoni (Bib Ind. 250: Ranking I. 333) agrees with Yahiya.

⁵ Firishta (ibid.) calls him Darya Khan: Acc. to Firishta Zafar's death took place in 775 H.

⁶ Ms. reads *مقدم بچکان*: Badaoni, "Muquddam Zādas".

and above the present payment for Guzarat. The Sultan ordered that if the present deputy-vice-roy of Guzarat, Zia'u-l Mulk Malik Shamsuddin Abu Rijā¹ consented to these enhanced terms, he should be continued in office. Knowing that he could not pay them, and that Shamsuddin Dāmaghāni had put forward an extravagant offer, Abu Rijā did not agree to the proposal; Dāmaghāni then received a golden girdle and a silver palanquin and was appointed governor of Guzarat.

Reaching Guzarat, wild dreams and perverse thoughts entered his brain, and he raised the banner of insurrection, for he found that he was unable to fulfil his promise. At length, the *Amirs* of Guzarat² such as Malik Sheikhul Mulk Fakhrud-din sallied forth in a hostile manner against Dāmaghāni in the year 778 H. and having slain him, severed off the head and sent it to the court.³ This revolt was (thereby) put down. During the prosperous sovereignty of that good and gracious Emperor, his greatness and beneficence⁴ had such an effect over every quarter of his territories,⁵ that no where any rebellion reared up its head, nor any body dared to be rebellious in any part, nor could anyone turn his feet from the path of obedience,⁶ until this revolt of Dāmaghāni, and he quickly received the punishment for his perfidy.

The frontiers of the empire were secured by placing them under great *amirs* and the well-wishers of the Emperor. Thus, towards Hindustan, on the frontier of Bengal, the fiefs of Karah and Mahoba and the district of Dalamau were conferred on Malikush Shark Mardān Daulat, who received the title of Nasirul Mulk. The *ikta's* of Oudh and Sandilah,⁷ and the district of Kol were placed under

¹ The text is not clear: we have seen that Shamsuddin Abu Rijā was entrusted with Sihrind, and that in 773 H., on the death of Zafar Khan, Governor of Guzarat, he was succeeded by his eldest son. We find in C.H.I. III "Firuz was loth to disturb Zafar Khan (? Zafar Khan was already dead in 773 H.), but demanded, of his deputy, Abu Rijā the additional contributions suggested by Dāmaghāni. On Abu Rijā's refusal Firuz dismissed him and his master Zafar Khan, and appointed Dāmaghāni, Governor of Guzarat.

² Ms. reads اميران صرة گجرات: Elliot (IV. 13) *New Amirs*: Ranking (I. 334) *Amirs of Hundreds of Guzarat*: Firishta, *ibid.* (456) "Ameer Judeeda".

³ "Thereafter Guzarat was put under the control of Farhat-ul Mulk, otherwise known as Malik Mufarrih Sultāni." Ranking I. 334: Badaoni (Bib. Ind. 251): Firishta, 456.

⁴ MS. reads فرط و احسان (? احسان).

⁵ MS. reads پیکار (? پیکر) مملکت.

⁶ دایرة اطاعت properly, circle, orbit.

⁷ MS. reads سندبد.

Hisamu-l Mulk and

Frontier of Bengal placed under Mardān Daulat: Oudh etc., upon Hisamu-l Mulk.

Jaunpur to Bahruz Sultānī: Bihar to Bir Afgān.

Nasiru-d-d-din placed in charge of Multan against Mughal inroads.

Kara and Mahoba placed under Sulaiman, son of Mardān Daulat.

title of Farhatu-l Mulk.

Sultan to Etawah and Akhal.

the Sultan had been worsted, were (now) placed in safety,³ and were taken to Delhi with their wives, children, horse, and attendants. The foundation of fortresses were laid at Akmal and Tablāhī.⁴ At these places,⁵ Malik Zādā Firoz, son of Malik Taju-d-dīn was left with a large following and.....⁶ amirs. Having conferred the *iktās* of Firozpur Tablāhī and Akhal on Tajuddīn and Malik Afgan respectively, the Sultan found his way to Delhi. In this year also Malik Hisamuddin Nawa,⁷ amir of Oudh, who was in attendance on the Sultan passed away, and Oudh was given over to Malik Saifuddin his eldest son.* *

¹ Badaoni reads "Malik Marwan."

* * Portion under asterisk is omitted in Elliot.

² Badaoni, "Akchak": The reason of this expedition was a rebellion of the Zemindars of Etawah. Firishta.

³ MS. reads *استظهار در آورده*.

⁴ Badaoni "Batlāhī": Firishta, "Tilāi".

⁵ Badaoni, "Firozpur and Batlāhī."

⁶ MS. illegible.

⁷ Badaoni, "Malik Nizāmuddīn".

Malik Hisamu-ddīn Nawa. The fief of Jaunpur and Zāfrābād was given to Malik Bahruz Sultānī. The fief of Bihar to Malik Bir Afgān. These *amirs* showed no laxity in coercing the insurgents of those parts and confiscating the territories on the frontiers. Thus the Sultan had no anxiety for the control and safety of these parts of his dominion. But towards Khorassan there was no *amir* capable of withstanding the attacks of the Mughals. He (the Sultan) was therefore compelled to summon Malikush Shark Malik Nasiruddin from the fief of Karah and Mahoba, and to send him to Multan in order to put down the disturbance created by accursed

(Mughals), and punish them for their assaults. The *iktās* of this quarter and its dependencies were placed under him, and the fief of Hindustan, such as Karah and Mahoba were bestowed upon Malikush Shark Malik Shamsuddin Sulaiman, son of Malik Mardān Daulat.¹ After the assassination of Dāmaghāni, Guzarat was given over to Malik Mufarrih Sultānī who received the

In the year 781 H. (1379 A.D.) the Emperor marched towards Sāmāna: on his reaching the destination, Malik Kabūl Kurān Khwān, *amir* of the Privy council and the Chief of Sāmāna presented offerings and the Sultan showed him great favours. Then, marching through Daulatābād, Ambālā, and Sāhābād, he entered the hills of Saharnpur¹ and levied tribute from the Rāi of Sirmore and the Rāis of the hills, and then took his way back to the capital.

Just at this time² there came a report of the insurrection of Khargu³ the Katehr chief. This Rebellion of Khargu, the Katehr chief. Khargu had invited Saiyid Muhammad, who held Badāūn, and his brother Saiyid 'Alaud-dīn, to a feast at his house, and had them basely murdered. In 782 H., the Sultan proceeded against Katehr to take vengeance, and ravaged the country. The rebels of those parts were brought to punishment. Khargu made his escape towards the hills of Kumayun, the country of the Mahtas.⁴ The Sultan also attacked them. ** When the expedition came to a conclusion, the Emperor placed Badāūn under Malik Qabūl Nawa, and made him the lord of Bed chamber:⁵ he (also) appointed Malik *Khīṭāb*, the Afgan at Sambhal for the chastisement (of the rebels) and holding firm Katehr.** The King, under the pretence of hunting, went annually to Kather, and that country became so devastated that nothing but game lived there.

And in the year 784 H. (1382 A.D.) the Sultan built a fortress at Babuli⁶ which is seven *Krohs* from Badāūn, and gave it the name of Firōzpūr, but the people called it Pur-i-ākhhirīn. Afterwards, the Sultan grew weak and feeble, for his age was ninety years.

¹ MS. reads کوه پایه سانتور Ranking, 334, "Sintur hills:" Firishta, "foot of the mts. of Saharanpur:" Elliot Saharanpur.

² Badauni gives 782 H:

³ MS. reads کهرکو: Elliot, Khargu: Ranking, "Khūkar": Firishta "Kharku or Khargoo": Badaoni, کهرکو.

⁴ MS. reads مہنگانوں:

⁵ سر پرده دار خاص.

** Portion under asterisk omitted in Elliot.

⁶ MS. reads, بدولی: Badaoni, "Babuli," "possibly from the abundance there of the *Acacia Arabica* known as Babul—Ranking: Firishta, "Basuli" Elliot, "Beoli:"

Khān-i-Jahan,¹ his Vizier, held the reins² (of the State) and brought under his sway the affairs of the State. The Firozshāhi amirs and maliks were entirely subservient³ to him, and those who opposed him (Vizier) were removed from the presence of the Sultan by all possible means; some were killed and others confined.⁴ At length, matters came to such a pass, that whatever did Khān-i-Jahan say, the Sultan used to do. For this, the affairs of the state became slow-moving, and some loss occurred daily.

Once, Khān-i-Jahan represented to the Sultan how Prince Muhammad Khān having allied himself with some amirs and maliks, such as, Dariyā Khān, son of Zafar Khān, amir of Guzarat, Malik Yakub Muhammad Hāji, the master of the horse, Malik Rāju, Malik Samāuddīn, and Malik Kamālu-d-dīn, the son of Malik' Ariz, the personal attendant of the Emperor, was after raising an insurrection. The Sultan had entrusted the affairs of the State upon Khān-i-Jahan, he, without thought and consideration issued the firmān that they should be taken into custody. When the prince heard this he omitted to pay his respects to the Sultan for sometime, and although the Vizier called for his presence the latter made excuses. Then, the Vizier, under the pretence of a balance of accounts kept, Dariyā Khān, son of Zafar Khān, amir of Mahoba, confined in his house. This alarmed the prince still more, (and one day in private came to the Sultan's presence⁵) and he made a statement of his position to his father.⁶ The Sultan gave order for the removal of the Vizier, and for the release of Dariyā Khān. The prince having done this,⁷ Malik Ya'kub, master of the horse, (brought out)⁸ all the horses and foot, and Malik Kutubuddīn Faramuz,⁹ keeper of the elephants, (made ready) the elephants with their litters and armour,¹⁰ and took them to the prince. The

¹ Jūnān Shah: Briggs says Zafar Khān Farsy :

² مطلق العنان, an error for مطلق العنان.

³ مسخر او گشنهر, an error for مسخر etc.

⁴ دستگیر, an error for دستگیر.

⁵ The bracketed portion is taken from Badaoni. Firishta relates that the prince entered into a close palanquin, and was carried to the seraglio of the Emperor.

⁶ MS. reads, سلطان نیز او را قبول کرده بودند حاصل کردن نتوانستند.

⁷ MS. reads, شاهزاده محمد خان ساخته.

⁸ The predicate is missing in the text.

⁹ MS. فرامر. Elliot "Faramuz".

¹⁰ کستوان, *Kustuwān*, *Gustuwān*, properly, horse armour.

Firozī slaves and amirs, and the mass of the people also joined the prince.

In the month of Rajab, 789 H. (July-Aug. 1387 A.D.), with full preparations, the prince set out late one night, with a large following, to the house of *Khān-i-Jahān*. When the latter heard of the approach, he took *Dariyā Khān* out of prison and put him to death,¹ and collecting a few chosen followers entered into conflict with the prince.

At length, losing the power (of opposition) he fell back to his house, and got a wound while entering it. Unable to make further resistance, he came out (of the house) by another route with a few adherents and escaped towards Mewat, and sought shelter from *Kokā Chauhan*, at *Mahāri*.

The prince plundered the Vizier's house of all its gold and wealth, and arms, horses, and effects; he then returned to the court. (Next) he caused *Malik Bihzād Fath Khān*, *Malik 'Imadu-daulat*, *Malik Shamsuddīn*...², and *Malik Musalih Muksarah* who had sided with *Khān-i-Jahān*, to be brought to the court and executed.

When these transactions were reported to the Emperor, he resigned the reins of government into the hands of the prince, and the amirs and maliks and the slaves of Sultan Firoz and the people in general rallied round the prince. The Sultan grew old and feeble, so of necessity he, at length, made over to the prince the paraphernalia of sovereignty, with all the horses, elephants, effects, and equipage. He gave him the title of *Nāsirud-dīn Muḥammad Shah*, and betook himself to the service of God. In every *Jami'a* mosque throughout the dominions, the *Khutbah* was read in the names of the two sovereigns, and in the month of Sha'aban, 789 H. (Aug. 1387 A.D.) Muhammad Shah ascended the throne in the palace of *Jahān numāh*.

The titles and offices, the fiefs and allowances, pensions and gifts, and whatever had been enjoyed by any one during the previous reign were confirmed. *Malik Yakub*, master of the horse was made *Sikandar Khān*³ and was nominated to the charge of the government of Guzarat. * * *Malik Rāju*

¹ Firishta, "having first put to death Zafar Khan".

² MS. reads, *ملك شمس الدين بربان*.

³ MS. reads, *اسكندر خان*: Badaoni and Elliot, "Sikandar".

** Portion under asterisk omitted in Elliot.

became Mubāriz Khān; Kamāl 'Amr (?)¹ became Dastur Khān; Malik Samā' became Aminu-l-Mulk; Malik Samā'uddin and Kamāluddin obtained places near the person of the King and became the recipient of his favour: the duties of the Diwan were conferred on them. * * Malik Ya'kub Sikandar

Khān-i-Jahān was seized and put to death.

Khān was sent with an army to Mahāri against Khān-i-Jahan. When this force reached Mahāri, the accursed Kokā bound Khān-i-Jahān, and delivered him up to Sikandar Khān, who put him to death, and having sent his head to the court, went his way to Guzarāt. The prince then engaged himself to the duties of government.

In the month of Zilhijjah,² of the year,³ Muhammad Shah marched towards the Sirmūr hills, and there spent two months, hunting rhinoceros and elk. While thus engaged, advices were received relating to the perfidious assassination of Sikandar Khān at the hands of Malik Mufarrih, Amīr of Kambayat and the Amirs-sadah of Guza-

Muhammad Shah on hunting expedition at Sirmūr hills.

Assassination of Sikandar Khān.

rat. The army that had set out with the deceased, some of them wounded and some despoiled, returned to Delhi with Saiyid Salār⁴. On this information, Prince Muhammad Khān became thoughtful and anxious, and hastened to the capital. But as he was inexperienced, the Prince gave himself up to enjoyment and luxury, and took no thought for avenging

Incompetence of Muhammad and the Kingdom in disorder.

Sikandar Khan⁵. For five months the (old) rules and arrangements kept the affairs of the state agoing, but at length the kingdom fell into great disorder. The Firoz Shāhī slaves who had taken up their habitations in Delhi and Firozābād, stirred up by the opposition shown by Malik Samāu-d-din and Malik Kamāluddin⁶, set themselves up in opposition to the Prince and joined themselves to Firoz

¹ کمال عمر.

² Elliot, Zilkaāda.

³ Firishta and Badaoni give 790 H.

⁴ Badaoni writes "Sipah-Salar".

⁵ Text reads, و کشته شدن سکندر خان سهل پنداشت.

Badaoni (ibid. 254) writes, فکر انتقام سکندر خان نکرده.

⁶ Firishta (460) writes Bahauddin and Kamāluddin, cousins of Prince Muhammad. Thus, he says, the nobles seeing the affairs in them united themselves with Princes Bahauddin, etc., for the purpose of subverting his authority. Badaoni's version is different. He writes thus "the Sultan's" (Muh. Shah) soldiery by reason of their enmity and jealousy against Samauddin and Kamaluddin, who were the proteges of Muhammad Shah, set themselves in opposition to them, etc."

Shah. When the Prince came to know of these facts, he sent out Malik Zahiruddin Lahori to parley with the slaves, who had assembled in the *Maidān*. They, however, pelted him with stones, and thereby wounding Zahiruddin made a display of their force and rejected all overtures for peace. The Malik, thus wounded, was obliged to retire near the prince, who was prepared for action. The Prince advanced with his horse, foot and elephants to the *Maidān* against the rebels; and when he fell upon them, they fled to the palace and sought refuge with the old Sultan. For a couple of days fighting went on, but on the third day when the prince was prepared to renew the contest, the insurgents brought out the old Sultan from the palace. When the soldiers and elephant-drivers set eyes upon their former master they deserted the prince and came over to the Sultan¹. Finding that he was unable to continue the struggle further, the prince with a small following fled towards the Sirmur hills. The camp of the Prince and those of his followers were put to plunder. The city now presented a scene of great violence.

Muhammad march
against insurgents, his
success.

Flight of Muham-
mad Shah to Sirmur.

Tranquillity being restored, the old Sultan appointed Prince Tughlaq Shah, the son of his (elder) son Fath Khan, his heir-apparent, and con-

Prince Tughlaq Shah
appointed heir.

signed to him the affairs of government. In the meantime, Amir Husain Ahmad Ikbāl,² son-in-law of the Sultan, who had separated from the party of the prince, was made prisoner by the Hindu amirs, and taken to Tughlaq Shah who had him executed before the *dākhūl*; orders were issued to Amirs Sadah of Samānā, directing them to seize Ghalib Khān³ the amir, and bring him to the court. When he was brought in the prince sent him away a prisoner to Bihār, and conferred Samānā upon Malik Sultān Shah. On the 18th Ramazān,⁴ 790

Death of Sultan
Firoz, His apprecia-
tion.

H., (Nov. 1388 A.D.) Sultan Firoz, may his tomb be sanctified, died, worn out with weakness. It has been recorded by veracious historians and truthful chroniclers of venerable age that since the time of Nasiruddin, son of late Sultan Shamsu-d-dīn Altamash, who was a second Naushirwan,⁵ there has been no king (in Delhi) so just, and kind, so

¹ Text runs—چون لشکرو پیل بانان همه پرورده سلطان بودند بیکبا رگی
از خانب شاهزاده روی تافته بر سلطان مرحوم پیوستند

² Badaoni, Mir Hasan: Firishta, 'Amir Saiyid Hussain.'

³ Elliot, 'Ali Khān: Badaoni, Ghalib Khān

⁴ Badaoni, 16th Ramazān, 790 H.: Firishta, 3rd Ramazān.

⁵ The name of a King of Persia, called also Khosrou Naushirwān, in whose reign Māhomet was born in 578 A.D.

courteous and God-fearing, or such a builder, like the late Firoz Shah, may his tomb be blessed and may he dwell in paradise! His bravery and justice won for him the hearts of his subjects. If any indigent traveller by the decree of God, died on the way, the feudal chiefs, the holders of offices, and the *muqaddams* of the vicinity, having called together the Imāms, the Kāzis, and all Musalmans, examined the corpse, and drew up a report under the Kazi's seal, certifying that no trace of any wound was discernible on the body, and after that they buried it. Thus, by enquiries of the Kazis, all the injunctions of the Sherra (law) were carried to the letter, and on all sides it was in no way possible that during the reign of this sovereign, any strong man could tyrannise over the weak.**

COUPLET.

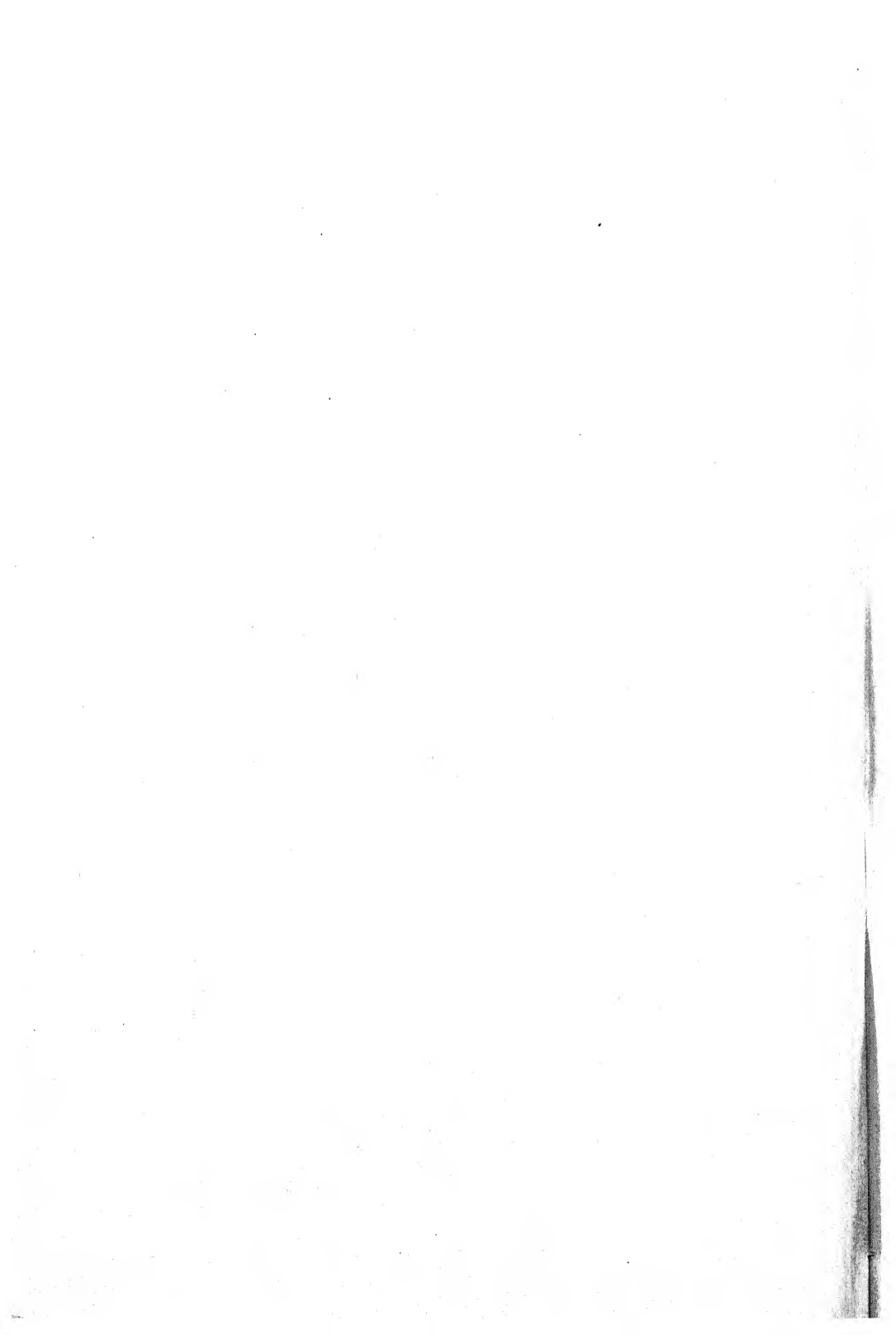
After many a revolution of the trying sphere
Died he, but his justice remained!

Almighty God immersed this gentle, beneficent and just king in the divine compassion, and gave him a place in the propinquity of His mercy! The rule of the late Sultan Firoz Shah, may his tomb be sanctified, lasted for 38 years,¹ and nine months. The two words, "*Wajāt-i-Firoz*" comprise the numerical letters of the date of his demise.²

** The text in Elliot here terminates.

¹ Elliot 37 years and 9 months. Badaoni, "38 years and some months." Firīshṭa of latter opinion.

² Text. تاریخ وفات سلطان بهمن دو لفظ یافتہ (وفات) فیروز سنہ ۷۹۰.



End of Prasenajit, King of Kosala

By NILMANI CHAKRAVARTI

Bimbisāra, King of Magadh and Prasenajit, King of Kosala, were contemporaries of Buddha and both were his great admirers. Bimbisāra was put to death by starvation, by his son Ajātaśatru. In several places in the Pāli literature there are references to this patricidal crime. The earliest mention of it is to be found in the Sāmaññaphalasuttanta of the Dighanikāya, where Ajātaśatru, during a visit to Buddha, confessed his crime before the teacher. The Ceylonese chronicle Mahāvamsa also records the fact and describes the whole race as patricidal. This is going too far. The later Pāli commentaries record the details of the crime (see Sumaṅgalavilāsinī on the Sāmaññaphalasuttanta). Historians of modern times have accepted the fact as true although the Jaina records attempt to mitigate the crime (see Bhadravāhu's Kalpasūtra) and the Brahminic records are silent about it.

The ancient records are all silent about the end of the other king. Professor Rhys Davids in his "Buddhist India" (page 4) wrote: "Three years afterwards, Pasenadi's son Viḍudabha revolted against his father, who was then at *Ulumba* in the Sākya country. The latter fled to Rājagaha to ask Ajātaśatru for aid; but was taken ill and died outside the city-gate." In a foot note on the same page the following references have been given:—Samyuttanikāya, vol. I, 83; Jātaka 2,403; 4,343 and Avadāna śataka 51. But in none of these sources there is any reference to Viḍudabha's rebellion and usurpation of the throne. In the commentary on the Dhammapada, verse 3, ch. IV, as well as in the *Paccuppannavatthu* of the Bhaddasāla-jātaka (Faṁsoll 465) we get a detailed account of the end of Prasenajit. It must be said here that the commentaries, though they are of late origin, are all based on the Sinhalese commentary, which is ascribed to Mahinda, the apostle of Ceylone, and some reliance can be placed on them. The story is briefly given below:—

Prasenajit, king of Kośala, appointed as his commander-in-chief Bandhula, a Malla of Kusinārā, who was his fellow-student at Taxila. The latter was a just man and soon became very popular and powerful. He had a number of war-like sons. Once some officers of the court of justice taking bribe wrongly decided a suit. At this the aggrieved party appealed to Bandhula who rightly judged the matter and the people praised him loudly. The King hearing the fact was highly pleased and

appointed Bandhula as the administrator of justice. The court officials were in great difficulty and began to conspire to bring about his ruin. They told the king that Bandhula was desirous of usurping the throne. The king believing their words contrived a plan for putting to death Bandhula and his sons. Being afraid of doing anything in the city for popular displeasure, he employed some men and raised a rebellion in the frontier of his Kingdom and sent Bandhula with his sons to put down that. The king also sent men with instructions to put Bandhula and his sons to death. On the arrival of the commander the pretended rebels fled and when he was returning to the city he was murdered along with his sons. Afterwards Prasenajit came to know of Bandhula's innocence and was highly remorseful. He appointed Dīghakārāyaṇa, Bandhula's nephew, his commander-in-chief.

It may be said here in passing that in the Arthaśāstra of Kauṭilya (Bk. V, ch. V) we come across a teacher named Dīrgha-cārāyaṇa. Phonetically Pāli Dīghakārāyaṇa and Sanskrit Dīrghacārāyaṇa are one and the same and both were politicians. In the Kāmasūtra we come across a teacher named Cārāyaṇa who wrote a treatise on the Kāmaśāstra (Kāmasūtra I, 1. 12). His opinion also has been quoted as an authority in the Kāmasūtra I, 4.20 and I, 5.22. From I, 5.22 it appears that he was a political intriguer. From the above facts it appears quite probable that three persons were one and the same and flourished towards the end of the 6th or the beginning of the 5th century B.C.

Dīgha-Kārāyaṇa was a shrewd man. He at once began to devise plan for wreaking Vengeance on Prasenajit for the murder of his uncle and his sons. Once Buddha was sojourning in a small town of the Śākya, named Uḷumpa. King Prasenajit went there and encamped near the residence of Buddha and went to pay a visit to him. While entering the monastery, the King in order to show humility handed over his crown, sword and other insignia of royalty to Dīgha-Kārāyaṇa and alone entered into the chamber of Buddha. Kārāyaṇa, who evidently by that time had the whole army within his control, taking advantage of that crowned Virūlhaka as king and went to Sravastī, leaving a horse and an attendant woman for the deposed king. When Prasenajit came out he found none and learning everything from the woman proceeded to Rājagṛha to ask for help from Ajātaśatru his nephew and son-in-law. He arrived there late in the evening, found the city-gate closed, was taken ill and died in the night, in a hut outside the gate.

It is to be noted here that in the Saṃyuttanikāya (II, 89, p. 118, P.T.S. edition) we find that King Pasenadi (Prasenajit) paid a visit to Buddha accompanied by Dīgha kārāyaṇa, at a small town of the Śākya, named Medaḷumpa. As in the story given above the King made over the insignia of royalty to

Kārāyaṇa and entered alone into Buddha's chamber. But the latter part of the story, *i.e.*, the overthrow of the king by Kārāyaṇa is not to be found in it. In the Avadāna śataka (vol. II, p. 114) Dīrgha Cārāyaṇa has been mentioned as chariot-eer of Prasenajit.

Regarding the remarks of Prof. Rhys Davids quoted above, it may be said, that it is quite probable that Viruḥhaka did not entertain good feelings towards his father because he sent away Viruḥhaka and his mother, when he came to know that the lady was an illegitimate daughter of her father and only accepted them to his favour, through the intervention of Buddha (see the comm. referred to above). Further the usurpation of Ajātasatru might have instigated him to rebel against his father, but the records do not show this.

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It may be said here in passing that in the Arthaśāstra of Kauṭilya (Bk. V, ch. V) we come across a teacher named Dirgha-cārāyaṇa. Phonetically Pāli Dighakārāyaṇa and Sanskrit Dirghacārāyaṇa are one and the same and both were politicians. In the Kāmasūtra of Vātsāyana we come across a teacher named Cārāyaṇa who wrote a treatise on the Kāmaśāstra (Kāmasūtra I, 1. 12). His opinion also has been quoted as an authority in the Kāmasūtra I, 4.20 and I, 5.22. From I, 5.22 it appears that he was a political intriguer. From the above facts it appears quite probable that three persons were one and the same and flourished towards the end of the 6th or the beginning of the 5th century B.C.

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Ghoṭakamukha a predecessor of Kauṭilya and Vātsāyana

By NILMANI CHAKRAVARTTI

Both Kauṭilya and Vātsāyana mention as their predecessor Ghoṭakamukha and Cārāyana or Dirghacārāyana. In my paper on "The end of Prasenajit, king of kośala" I have pointed out that Cārāyana was a contemporary and an officer of Prasenajit and the latter was overthrown by the former. In the present paper I propose to say something about Ghoṭakamukha. Ghoṭakamukha has been only once quoted in the Kauṭilya Arthashastra (Bk. V, Ch. V). But from that quotation nothing can be ascertained except that he was a predecessor of Kauṭilya and that he probably wrote a treatise on politics. He has been, however, largely referred to in the Kāmasūtra of Vātsāyana. In the introductory portion of the work (Ch.-I, 14) it has been said that Ghoṭakamukha wrote a treatise on *Kanyāsamprayuktakam* or 'union with a girl'.

He has been quoted six times in the body of the book :—

1. गणिकायाः दुहिता वा परिचारिका वाऽनन्यपूर्वा सप्तमौति
घोटकमुखः । कामसूत्र I. 5. 24.

'A daughter of a harlot or an attendant woman who has not associated with any one previously, as the seventh', thus says Ghoṭakamukha :—

2. यां गृहीत्वा कृतिनमात्मानं मन्येत न च समानैर्निन्द्येत तस्यां
प्रवृत्तिरिति घोटकमुखः । (*Ibid.*, III. 1. 3).

'Taking whom one would consider oneself as having accomplished his purpose, and would not be blamed by his equals :—

One should associate with such an one (girl)', thus says Ghoṭakamukha.

3. न यदृच्छ्या केवलमानुषयेति घोटकमुखः । (*Ibid.*, III.
1. 4).

'And not at will with any woman'—so says Ghoṭakamukha.

4. सर्वा एव हि कन्याः पुरुषेण प्रयुज्यमानं वचनं विषदन्ते न तु
लघुमिश्रामपि वाचं वदन्तीति घोटकमुखः । (*Ibid.*, III. 2. 7).

All girls endure words uttered by a man but do not utter even the smallest word in the middle—so says Ghoṭakamukha.

5. अन्यामपि बाह्यां स्पृहयेद् बालाया(?)मेवं सति धर्माधिगमे संवननं श्लाघ्यमिति घोटकमुखः । III. 3. 4.

‘One may covet any other girl who is an outsider (outside a circle of relation) and thus on the attainment of Dharma (Virtue) love is praise-worthy’—so says Ghoṭakamukha.

6. दूरगतभावोऽपि हि कन्यासु न निर्व्वदेन सिध्यतीति घोटकमुखः । III. 4. 29.

‘One who has gone far in his affection does not succeed with girls through indifference’—so says Ghoṭakamukha.

From the above quotations we can have some idea about the views of Ghoṭakamukha. He has given preference to a girl or to a woman who is not claimed by any one, for the purpose of love-making. He has also considered marriage to be *Dharma*.

In the Majjhimanikāya of the Pāli *Suttapitaka* there is a sutta named Ghoṭamukha-sutta (M. N. Vol. II, p. 157), which contains a conversation between a Brāhmaṇa named Ghoṭamukha and a Buddhist monk named Udena. Ghoṭamukha who was probably an inhabitant of the Aṅga country and used to receive daily five hundred *kahāpanas* from the king of Aṅga came to Benares on some business and there met Udena. In the course of a conversation between the two, Udena said that there were four classes of men; viz. (1) those who subject their own selves to sufferings, (2) those who cause sufferings to others, (3) those who subject themselves to sufferings and cause trouble to others and (4) those who do not cause sufferings to themselves nor to others. And Udena asked Ghoṭamukha which of these classes of men would please him. Ghoṭamukha said that he would like those men who would not subject themselves to sufferings nor would cause sufferings to others.

A careful comparison of the view of Ghoṭamukha of the Ghoṭamukhasutta with the views of Ghoṭakamukha quoted in the Kāmasāstra of Vātsāyana would show that there is similarity between the two. The Sūtra III. 1. 3. quoted above as well as the general tone of the Sūtras 1, 3 and 5 represent the views of one who would not bring about sufferings on himself nor cause trouble to others. I have no hesitation in

identifying Ghoṭakamukha, quoted by Vātsāyana as well as Kauṭilya with Ghoṭamukha of the Ghoṭamukha suttanta.

The above identification also helps us in ascertaining the time of Ghoṭakamukha or Ghoṭamukha. It has been said in the sutta that being pleased with the conversation with Udena Ghoṭamukha wanted to take refuge (*saraṇa*) with Udena but the latter told him to take refuge with Buddha with whom he himself took refuge. When Ghoṭamukha enquired as to where Buddha was at that time Udena told him that he (Buddha) attained Parinibbāna. Then Ghoṭamukha made his declaration of faith in Buddha, Dhamma and Saṅgha and wanted to offer something to Udena out of the five hundred *kaḥāpaṇas* which he daily received from the king of Aṅga. Udena would not accept any gold or silver and requested Ghoṭamukha to construct a hall (*upatthānasālā*) for the *Bhikkhus* at Pāṭaliputra. The hall was constructed and named after the donor.

From the above facts it is clear that Ghoṭamukha lived after the death of Buddha and at a time when Pāṭaliputra grew in importance. During the last journey of Buddha from Rājagṛha to Kusinārā, Ajātaśatru, king of Magadha was building a fortress at the site of Pāṭaliputra to ward off an invasion of the Vajjis who occupied the territory to the north of the Ganges. Sometime after during the rule of a successor of Ajātaśatru the capital was transferred from Rājagṛha to Pāṭaliputra about the 4th century B.C. This gives us one limit for the date of Ghoṭamukha. Regarding the other limit, it may be said that on the railings of the Bharhut Stūpa amongst the titles of donors we find the expression *Pañcaneṭṭakayika* which shows that the five *nikāyas* of the Pāli canon were well-known at that time. Portions of the railings of the Bharhut Stūpa may be referred to the middle of the 3rd century B.C. and so Ghoṭakamukha or Ghoṭamukha must have flourished between the 4th and the 3rd century B.C.



The Beginnings of Suketri Dynasty

By S. R. SHARMA

Cunningham placed the beginning of the present reigning house of Suket in the latter part of the eighth century¹. Messrs. Vogel and Hutchinson followed him closely and assigned 765 A.D. as the date of the establishment of the present house under Vir Sen. But the tradition has it that these Sens migrated to the Punjab hills in the beginning of the thirteenth century. Of course the tradition may be wrong, but it is very seldom that it postdates any events. Raja Jai Chand with whom the present dynasty seeks to connect itself did not after all play any very heroic part in the history of India that a Rajput family should be anxious to connect itself with his descendants. Still less could much credit accrue to the house by being connected with these thrice expelled descendants of the unfortunate Raja. Unless, therefore, some very compelling reasons can be advanced against the tradition, we should rather be inclined to accept it.

Let us therefore study Cunningham's thesis as elaborated by his followers. To begin with, from Vir Sen to Arjun Sen there were thirty-five reigns. Arjun Sen's date has been, pretty conclusively, fixed at about 1550 A.D. Now this would give about 350 years to 35 reigns giving an average of ten years. It is claimed that as the average for the latter half of the dynasty's history (from Arjun Sen 1550 A.D. to Uggar Sen 1876 A.D.) works out at 30 years a reign, we should allow a longer period for the earlier half as well. The argument is rather inconclusive in view of the fact that the average of 31 years gets reduced to 24 years if we include the four Rajas bringing the list up to the death of Raja Bhim Sen in 1919 A.D.

But Cunningham relied upon even more broken reeds. His one strong point at the time seemed to be the Nermad inscription which he dated in the year 1170 A.D. He identified Samudar Sen of this inscription with Raja Samudar Sen of Mandi and could thus point out one fixed date in the early history of the dynasty. But unfortunately Fleet's rendering of the inscription² has shattered it all. Cunningham read into the Varuna Sena, Sanjya Sen, and Ravi Sen of the inscription three Rajas of the Suketr Bansawali whose names stand poles apart from those mentioned in the inscription. Fleet flatly refused to accept this equation and on other grounds has placed

¹ Archaeological Survey Report, Vol. XIV, p. 123.

² Corp. Inscripte. Indi., Vol. III, p. 286 to 291.

the record in the seventh century A.D. As the names of the three Rajas mentioned in the inscription have nothing in common with those mentioned in the Bansavali, it would be too great a strain on our credulity to ask us to believe—even on Cunningham's authority—that Samudar Sen of the inscription has anything to do with Raja Samudar Sen of Suket. Thus here again Cunningham's argument totally fails.

Some supplementary evidence has been trumpeted up to bolster up Cunningham's thesis. Certain references to Suket in the early histories of the neighbouring hill states have been fished up to prove that the history of Suket carries us to very early times. Such are the references in the Chamba annals to Mushan Varman's taking refuge with a Raja of Suket about 800 A.D.¹, in the Bilaspur chronicles to Raja Bir Chand's conquest of Keonthal about 743 A.D., in the history of Kullo to its conquest in the reign of Bhupal and his successors by Rajas of Suket, in the annals of Sirmur to Raja Mahi Parkash's demanding the daughter of Raja Rupchand of Keonthal in marriage about 1108–1117 A.D.² We fail to find in these references anything to prove that the present Sen dynasty of Suket goes back to the times spoken of in the chronicles of these neighbouring States. Of course they prove that there were, in existence, at these early times the States of Suket and Keonthal. The traditional history of the present Suketor dynasty does not claim that Vir Sen or Giri Sen founded new states when they fled from Rupar, they became, it is asserted, masters of the states of Suket and Keonthal. It is probable that these states had become political entities much before their arrival on the scene. The evidence from the Sirmur chronicles throws a flood of welcome light on the question. The name of the Raja of Keonthal whose daughter's hand was demanded in marriage by Raja Mahi Parkash is set down as Rupchand. Now Giri Sen's descendants always carried the suffix Sen with their name and it is clear that reference is made here to some earlier reigning house of keonthal.

Thus we find that all that can be urged against the acceptance of the traditional account falls to the ground. The Nirmad inscription, references in the annals of other neighbouring state all prove useless in our search for some light on the question. There simply remains the problem of squeezing in fifty reigns of the Suketar Rajas in some 713 years. An average reign of fourteen years over a period of seven long centuries is inherently not improbable. Furthermore the number is reduced to forty Rajas for the same period if we consider the Rajas of Mandi. This would give about eighteen years as the average reign of the Mandi Rajas. There is no reason why we should be anxious to stretch a point and insist that the tradi-

¹ Chamba Gazetteer, p. 72.

² Sirmur Gazetteer, p. 9 and 10.

tional account is wrong; because, forsooth, the average of fourteen to eighteen years does not seem convincing to us. It does not carry us very far to say that if we accept the traditional date, the average reign of the early Rajas would be rather low when compared with the later ones. The early Rajas of Suket must have been small chieftains whose lives were spent in warfare with their own subjects if not with their neighbours. From Bir Sen to Bahu Sen the nine reigns, we know from the Mandi Bansavali, did not occupy more than 116 years, thus giving an average of less than thirteen years. The average is again confirmed if we work on the Mandi Bansavali to Jai Sen's times when we find 17 reigns occupying 185 years. No reason has so far been advanced to prove that these early rulers could not have ruled for such short periods. Our only guide therefore must be the tradition and in this case when it has nothing to gain by postdating the event, we are constrained to admit that it must be right. The beginning of the Suketar dynasty therefore must be put in the thirteenth century A.D.

On the Hindu names for the rectilinear geometrical figures

By BIBHUTIBHUSAN DATTA

In the Hindu mathematical treatises of later times, we discern two different systems of nomenclature for the rectilinear geometrical figures. In one system the naming is according to the number of "sides" of the figures, e.g. *tri-bhuja* (literally meaning "tri-lateral"), *catur-bhuja* ("quadri-lateral"), *pañca-bhuja* ("penta-lateral") *ṣaḍa-bhuja* ("hexa-lateral"), etc. In the other, the naming is based on the number of "angles" or "corners" in the figures, e.g. *tri-koṇa* (meaning literally "triangle"), *catur-koṇa* ("quadrangle"), *pañca-koṇa* ("penta-gon"), *ṣaṭ-koṇa* ("hexa-gon"), etc. We also commonly meet with such names as *tryasra* for the triangle, *caturaśra* or *caturasra* for the quadrilateral, *pañcāśra* for the pentagon, *ṣaḍaśra* for the hexagon, and so on. The true radical meaning of these names will be found later on. The present note aims primarily at examining the earlier Hindu names for the rectilinear geometrical figures and to determine, as far as possible, the oldest Hindu system of nomenclature. It is found that from the earliest times, the Hindus have followed the usage of naming the rectilinear figures according to the number of sides as well as of angles, and that the angle-nomenclature is the older with them. Amongst the Greeks, Euclid (c. 325 B.C.) in the earlier parts of his *Elements* divides the rectilinear figures according to the number of their sides (cf. *tri-pleuron*, *tetra-pleuron*, *poly-pleuron*), but later on he introduces the angle-nomenclature also (cf. *tri-gonon*, *tetra-gonon*). The Romans simply followed the Greek usage.¹ The early Egyptians together with the Babylonians, Hebrews, and Arabs are said to have followed only the side-nomenclature.²

The oldest Hindu names for the rectilinear geometrical figures were formed by the juxtaposition of the number names with *srakti*. The word *srakti* means the "angle" or "corner",³

¹ J. Tropfke, *Geschichte der Elementar-Mathematik*, 1923, Bd. IV, pp. 60-61.

² This information has been given to the writer in a personal letter by Dr. Solomon Gandz of New York and in fact, this note has grown out of a reply to an enquiry by him for the older and genuine Hindu usage in naming the rectilinear geometrical figures.

³ This meaning is given in all the known Sanskrit dictionaries. Professor E. W. Hopkins conjectures that *srakti* means the "spear" (vide *Journ. Amer. Orient. Soc.*, vol. 15, 1893, p. 264 fn). The word

so the name *catuṣṣrakti* literally means the "quadrangle." This name occurs in the *Vājasaneyī Saṁhitā*,¹ *Taittirīya Saṁhitā*,² *Śatapatha Brāhmaṇa*,³ *Āpastamba Śrauta-sūtra*,⁴ *Baudhāyana Śulba-sūtra*,⁵ and other works, the earliest of which was composed before 3000 B.C. Similarly we have in the *Rgveda*,⁶ the term *navasrakti* referring to the "nine corners" of the heaven. These names have long went out of use and are not met with in later works.

Another kind of names consists of compounds ending with *āśri*, *āśra* or *asra*. There is a rule of the celebrated grammarian Pāṇini (c. 700 B.C.) that at the end of a compound, *āśri* changes to *āśra* or *asra*.⁷ But it seems that that rule has not been always followed in practice. For compound names ending with *āśri*, such as *triraśri*, *caturaśri*, and *śatāśri* occurs as early as in the *Rgveda* (before 3000 B.C.).⁸ The name *aṣṭāśri* occurs in several early Sanskrit works.⁹ Similar names are occasionally met with even in later Hindu mathematical and other treatises.¹⁰ The names containing *āśra* or *asra* such as *tryasra*, *caturasra* or *caturaśra*, etc. are more common in the Sanskrit and kindred literatures of India, modern as well as old. But they were not however introduced before the time of the *Śrauta-sūtras* (c. 1500–2000 B.C.).¹¹

Competent authorities have differed as regards the literal significance of the compound names ending with *āśri*, *āśra* or *asra*. According to Amarasiṁha (c. 350 A.D.),¹² Bhaṭṭotpala (966)¹³ and Halāyudha (c. 1200)¹⁴ *āśri* means the "angle";

rakti has been employed in the *Rgveda* (vii. 18. 17), *Atharvaveda* (ii. 11. 2; viii. 5. 4, 7, 8), *Śatapatha Brāhmaṇa* (ii. 6. 1. 36; iii. 5. 2. 8); *Chāndogya Upaniṣad* (iii. 5. 1), *Āpastamba Śrauta-sūtra* (viii. 16. 6, 8. x. 5. 2, 3; xvii. 12—16) and *Baudhāyana Śulba-sūtra* (i. 72, 84, 101; ii. 25, 72; iii. 73, 77).

¹ xxxviii. 20. ² vi. 6. 10. 1.

³ ii. 6. 1. 10; vi. 1. 2. 29; 3. 3. 26; 7. 1. 15; vii. 5. 1. 23. ⁴ vii. 5. 1.

⁵ i. 79, 83. ⁶ viii. 76. 12. ⁷ Pāṇini's Grammar, v. 4. 120.

⁸ i. 152. 2 (*triraśri*); i. 152. 2 and iv. 22. 2 (*caturaśri*); vi. 17. 10 (*śatāśri*).

⁹ Vide *Aitareya Brāhmaṇa* (ii. 1); *Śatapatha Brāhmaṇa* (iii. 6. 4. 27; 7. 1. 28; v. 2. 1. 5); *Āpastamba Śrauta-sūtra* (vii. 3. 2; xvi. 4. 10). The term *navāśri* occurs in this latter work (xvi. 4. 11).

¹⁰ For instance we find in the *Bṛhat Saṁhitā* the use of *ṣaḍāśri* (Lv. 20; Lxxix. 8), *aṣṭāśri* (Lii. 28), *ṣoḍaśāśri* (Lii. 28); in the *Āryabhaṭṭiya* the use of *ṣaḍāśri* (ii. 6) and *dvādaśāśri* (ii. 3) and in the *Siddhānta-śekhara* the use of *dvādaśāśri* (xiii). Bhaṭṭotpala has quoted passages from earlier writers containing use of the term *ṣaḍāśri* (vide his commentary on the *Bṛhat Saṁhitā*, ed. Sudhakara Dvivedi, Benares, pp. 654, 655, 671, 760, 761).

¹¹ For instance the name *tryasra* occurs in the *Āpastamba Śrauta-sūtra*, xx. 12; *caturaśra* in *Āpastamba Śrauta-sūtra*, xvi. 4. 7; *Kātyāyana Śrauta-sūtra*, viii. 5. 28; xvi. 2. 2, 4. 7, 5. 5; xvii. 5. 3; *Kauśika sūtra* of *Atharvaveda*, Lxxxv. 137.

¹² Vide *Amarakoṣa* on "Koṇa."

¹³ See his commentary on *Bṛhat Saṁhitā*, pp. 680, 760, 761, 764.

¹⁴ *Abhidānaratnamālā*, ed. Aufrecht, iv. 4. 2.

according to Hemacandra (b. 1088),¹ it means the "angle of a room etc.", whereas in the opinion of Sāyana (c. 1325)² it means the "edge". Amongst the modern Indologists, Grassmann³ renders *āsri* by "sharp edge" (scharfe kanten), Aufrecht⁴ by "corner", Macdonell⁵ by "edge". According to Monier Williams,⁶ *āsri* means "the sharp side of anything", "corner", "angle (of a room or house)" or "edge (of a sword)". Rhys Davids⁷ observes that Sanskrit word *āsri* or *āsra* is equivalent to Pāli *assa* meaning "corner, point"; Greek ἄκροζ, ἄκριζ and οὐζ, sharp; Latin *acer*, sharp. It is found on closer observation, that the names ending with *āsri* have never been employed in connection with plane rectilinear figures, but they always refer to solid bodies such as sacrificial post (*yupa*), pillar, or an instrument (spear). On the other hand the use of the names ending with *āsra* or *asra* has always remained restricted to plane rectilinear figures. *Āsri* truly signifies the "edge"; with reference to "angle", it means the "dihedral angle", but not the solid angle at the point of intersection of more than two edges. For Āryabhata (499 A.D.) calls the triangular pyramid by the name (*ghana*) *śaḍaśri* and the cube by *dvādaśāśri*.⁸ This latter name has been restated by Śrīpati (1039 A.D.).⁹ In these instances *āsri* certainly refers to the "edge". The true significance is clearly in evidence in a certain passage in the *Arthaśāstra* of Kautilya (c. 350 B.C.). In describing the inauspicious crystals of valuable stones, Kautilya has employed the two appellations *naṣṭakoṇa* and *niraśri* to the same instance.¹⁰ So the word *āsri* implies something different from "koṇa" ("pointed corner" or the "solid angle" of the prism) and indeed, it means the "edge" of the prism.¹¹ Similarly in a certain passage of the *Āpastamba Śrauta-sūtra*¹², *āsri* undoubtedly refers to the edge. The description of a cube, found in ancient Jaina canonical works¹³ leaves, however, absolutely no doubt about the true significance of the word *āsri*. There the cube has been correctly described as *ṣaṭtala* ("six-faced"), *dvādaśāśrika* ("twelve-

¹ *Abhidhānacintamani*, "grhāde koṇa."

² Vide Sāyana's commentary on the *Rgveda* (iv. 22. 2; vi. 17. 10).

³ H. Grassmann, *Wörterbuch zum Rigveda*, Leipzig, 1873, p. 139.

⁴ Vide his edition of *Abhidhānaratnamāla* of Halāyudha.

⁵ *Practical Sanskrit Dictionary*.

⁶ *Sanskrit-English Dictionary*, new edition by Leumann and Cappeller.

⁷ Rhys Davids and Steele, *Pali-English Dictionary* on "assa". According to Rhys Davids it also means the "edge"; compare "aṇsi".

⁸ *Āryabhaṭṭiya*, ii. 3, 6.

⁹ *Siddhānta śekhara*, xiii.

¹⁰ *Arthaśāstra*, ed. by Shāmāśāstrī with English translation, ii. 11, 29, p. 77.

¹¹ Shāmāśāstrī wrongly translates *niraśri* as "uneven".

¹² xvi. 4, 7-11.

¹³ *Anuyogadvāraśūtra*, Sūtra 133; *Jambudvīpa prajñapti*, Sūtra 54.

edged") and *aṣṭakarmika* ("eight-cornered"). However, since the names containing the word *aśri* are not used in connection with the rectilinear figures, any further discussion of them will be beyond the scope of this paper.

In Sanskrit lexicons, the meaning of the word *aśra* or *asra* is stated to be "corner" or "angle." But it is found that the compound names ending with *aśra* or *asra* do not always possess a reference to the "angles" of the figure. For instance, *caturāśra* or *caturasra* does not always mean literally the "quadrangle." In the *Sūryaprajñapti* (c. 500 B.C.),¹ are found the names of four different figures viz., *sama-caturasra*, *viśama-caturasra*, *sama-catuskona* and *viśama-catuskona*. In these cases *caturasra* certainly means the "quadrilateral," as *catuskona* means the "quadrangle". Again in stating the tradition about the Uttaravedi, Baudhāyana says²: "It has the measure of a *sāmyā* and is four-cornered (*catuḥśrakti*)."³ He then adds³: "It is a square (*sama-caturasra*) as no particular rule is given." In these passages a distinction appears to have been implied between *catuḥśrakti* and *samacaturasra*. This distinction has been clearly brought out in a passage in the *Atharvaveda-Parīṣiṣṭa* which states, in connection with the construction of a certain sacrificial altar, that it "should be measured with the rope equally four-sided (*caturāśram*) and four-angled (*catuḥkonam*)".⁴

Amongst the later commentators, in the opinion of Ganeśa (1545), *tryasra* literally means the "triangle," *caturasra* the "quadrangle," *pañcāśra* the "pentagon," and so on;⁵ whereas according to Mallinatha⁶ and Abhayadevaśūri (c. 1050),⁷ *caturasra* literally means the "quadrilateral." Thibaut

¹ Sūtras 19, 25. According to Weber (*Indische Studien*, vol. 10, p. 274) *samacaturasra*=even square ("grades quadrat"), *viśama-caturasra*=oblique square ("schiefes quadrat"), *sama-catuskona*=even parallelogram and *viśama-catuskona*=oblique parallelogram.

² *Baudhāyana Śulva-sūtra*, i. 79. The translation is by Thibaut, "the Śulva-sūtras" (*Journ. Asiat. Soc. Beng.*, 1875); hereafter the reprints of these articles will be referred as Thibaut, *Śulva-sūtras*.

³ *Baudhāyana Śulva-sūtra*, i. 80.

⁴ *The Parīṣiṣṭas of the Atharvaveda*, ed. G. M. Bolling and J. V. Negelein, vol. I, Leipzig, 1909, xxx. 1. 5: "Caturāśram catuḥkonam tulyam sūtreṇa dhārayet".

⁵ Commentary on Bhāskara's *Līlāvati*, section on plane figures. Cf. H. T. Colebrooke, *Algebra with arithmetic and mensuration from the Sanskrit of Brahmagupta and Bhāscara*, London, 1817, p. 58 fn. Hereafter this book will be referred as Colebrooke, *Hindu Algebra*.

⁶ Commentary on Kālidāsa's *Kumārasambhava*, i. 32. This passage has been quoted in extenso by Weber in support of his rendering *caturasra* by "quadrilateral." (*Ind. Studs.*, vol. 10, p. 274 fn.)

⁷ Abhayadeva-sūri observes: "तत्र समाः—शरीरलक्षणेत्तप्रमाणा-
विस्वादिन्यस्तसोऽस्यो यस्य तत् समचतुरस्रं, अत्रिस्त्रिह चतुर्दिग्विभागोपलक्षिताः
शरीरावयवस्तस्य सर्वेऽवयवाः शरीरलक्षणेत्तप्रमाणाव्यभिचारिणो यस्य न तु

is responsible for the opinion that in *sama-caturasra*, which is the term commonly employed in the *Sulba-sūtras* to denote a square, the word *sama* refers to the equal length of the four sides and *caturasra* implies that the four angles are right angles.¹ A more plausible interpretation would be that *sama* refers to the form or shape of the figure which is to be the same in every respect and *caturasra* implying a quadrangle. It will then be consistent with the term *dirgha-caturasra* for the rectangle, which implies that the form of the *caturasra* is in this case *dirgha* or "longish".²

The names of rectilinear figures containing the word *koṇa* (= "angle", "corner"), such as *trikoṇa*, *catuskoṇa*, etc., meaning respectively the "trigonon," "tetragonon," etc., in general appears from the time of the *Sūryaprajñapti* (c. 500 B.C.)³ and the *Parīśiṣṭas of the Atharvaveda*.⁴ The names containing the word *bhūja* (= "arm"), such as *tribhūja*, *caturbhūja* etc., meaning respectively "trilateral", "quadrilateral" etc., are employed by Āryabhata (499 A.D.)⁵ and later writers⁶ in the most general sense. The word *tribhūja* occurs once in the *Atharvaveda* (c. 3000 B.C.)⁷ but it is doubtful whether in that instance, it means the "trilateral", as it usually does in later days.

In the Prākṛta literatures of India, the names of rectilinear figures are found to be compounds of number names with the word *aṁsa*. Thus in the *Dhammasaṁgani*,⁸ a Pāli work written in c. 350 B.C., probably earlier, we find the name *caturāṁsa* for the square, *chaḷāṁsa* for the hexagon, *aṭṭhāṁsa* for the octagon and *soḷasaṁsa* for the hekkadeccagon. Similarly in Ardha

न्यूनाधिकप्रमाणसंज्ञं समचतुरस्रं" | Commentary on *Śhānāṅga-sūtra*, vi. 3 (Sūtras 490-495).

¹ Thibaut, *Sulva-sūtras*, p. 7.

² Compare "चतुरस्रे समे क्षेत्रे" or "चतुरस्रे समे स्थितम्" occurring in Prithudakasvāmī's commentary on *Brāhma-sphuṭa-siddhānta*.

³ Sūtra 19; also 25. Euclid (c. 325 B.C.) uses *τρίγωνον* in the general sense to denote any triangle, whilst he restricts the use of *τετράγωνον* to the square only (Tropfke, *Elementar-Mathematik*, Bd. IV, p. 61).

⁴ xxiii. 1. 5; xxv. 1, 3, 6, 7, 11; xxx. 1. 5. There is mention of *trikoṇa*, *catuskoṇa*, *pañcakōṇa*, *ṣaṭkōṇa*, *saptakōṇa* and *aṣṭakōṇa*.

⁵ Āryabhaṭīya, ii. 6, 11, 13.

⁶ For instance see *Brāhmasphuṭa-siddhānta*, xii. 21, 27, 29; *Mahā-siddhānta*, xv. 66, 68, 79, 103. In the latter work for the first time appear the names *pañcabhūja* and *ṣaḍabhūja* (xv. 102).

⁷ viii. 9. 2.

⁸ This work is available in the Pāli original (ed. F. Müller, with its commentary *Aṭṭhasālinī* of Buddhagoṣa) as well as in English translation (C. A. F. Rhys Davids, *Buddhist Psychology*); vide §. 617. For the date of composition see the introduction to the English translation. The term *aṭṭhāṁsa* occurs as early as in the *Digha Nikāya* (ed. Rhys Davids and Carpenter, vol. I, p. 76).

Māgadhi, the triangle is called *tamsa*, the square *caturamsa*, the hexagon *chalamsa* and the octagon *atthamsa*.¹ The Prākṛita word *amsa* is derived from the Sanskrit *āsra* (or *asra*) or from *amsa* and means the "point, corner or edge".² The Sanskrit word *amsa* means "shoulder," "corner of a quadrangle". In the *Śrauta*- and *Śulba-sūtras*³ *amsa* denotes the "corner", particularly the two eastern corners of the quadrangular sacrificial altar.

The classification of triangles according to the sides (*sama-tribhuja*, *dvīsama-tribhuja*, *visama-tribhuja*—equilateral, isosceles, scalene triangles) is clearly in evidence in India in the beginning of the seventh century after Christ.⁴ It probably began earlier. The classification according to the angles is absent here. Only the right-angled triangle is distinguished by the name *jātya-tribhuja* by Brahmagupta and others.⁵ The oblique triangles are grouped according as the perpendicular (*lamba*) from a vertex on the opposite side falls inside or outside the figure, viz. *antar-lamba* (in-perpendicular) and *bahir-lamba* (out-perpendicular).⁶

The classification of quadrilaterals according to the sides as well as the angles is more ancient and is found as early as in the *Sūryaprajñapti* (c. 500 B.C.).⁷ The side nomenclature appears still earlier in the *Śulba-sūtras* (c. 800 B.C.):⁸ *sama-caturasra* (square) and *dirgha-caturasra* (rectangle). Often-times when there is no likelihood of an ambiguity, the prefix *sama* is deleted, so that only the term *caturasra* is used to denote the square.⁹ The rectangle is also called *āyata-caturasra*. This

¹ Vide *Uttarādhyāyana-sūtra* (ed. Charpentier), xxxvi. 22, 44-47; *Jambudvīpa-prajñapti-sūtra*, *Sūtra* 54; *Sūtrakṛtāṅga-sūtra* ii. 1. 15; *Bhagabati-sūtra*, *Sūtra* 724-6. and other works.

² *Pālī-English Dictionary* on "aṇsa", "aṇsi" and "aṇsa"; *Abhidhāna-Rājendra* on *amsa*.

³ *Āpastamba Śrauta-sūtra*, viii. 5. 20; xi. 4. 13; xii. 17. 21, etc.; *Baudhāyana Śulba-sūtra*, i. 34, 40, 44; iii. 70, 75.

⁴ *Brāhma-sphuṭa-siddhānta*, xii. 29, 33, 34.

⁵ *Ibid.*, xii. 38.

The Sanskrit word *jātya* means "noble," "well born," "geniune." Hence the implication underlying the name *jātya-tribhuja* for the right-angled triangle seems to be that all other triangles can be supposed to be derived from it. Thus the right-angled variety is the only "genuine" or "noble" kind of triangles. In fact, in solving the indeterminate problem of the solution of triangles in general Brahmagupta has always a method of solution by the juxtaposition of two right-angled triangles. He has further extended this method to the solution of certain quadrilaterals, particularly to the solution of convex quadrilaterals which now goes by his name.

⁶ Colebrooke, *Hindu Algebra*, p. 58 fn.

⁷ *Sūtras* 9 and 25.

⁸ *Āpastamba Śulba-sūtra* : ii. 7; iii. 1; iv. 6; v. 7; ix. 6 etc. *Baudhāyana Śulba-sūtra* : i. 36, 45, 48, 52, 54; etc. *Kātyāyana Śulba-parīśiṣṭa* : i. 16, 17, 29; ii. 11, 12, 21.

⁹ Compare *Āpastamba* : i. 5; ii. 4, 5, etc.; *Baudhāyana* : i. 22, 28, 50,

term occurs in the *Grhy-sūtras*.¹ But it is more common in the early Jaina *sūtras*.² And that is the usual name for the rectangle in later works.³ There are now generally distinguished five kinds of quadrilaterals:⁴ *sama-caturbhuja*, *āyata-caturbhuja*, *dvīsama-caturbhuja*, *trisama-caturbhuja*, and *viśama-caturbhuja*. Ganeśa's classification of the quadrilaterals is more thorough. According to him, "Quadrangle also is in the first place two fold: with equal or with unequal diagonals. The first of these or equi-diagonal tetragon (*sama-karṇa-caturbhuja*) comprises four distinctions: 1st *sama-caturbhuja*, equilateral, a square; 2d *viśama-caturbhuja*, a trapezium; 3d *āyata-dīrgha-caturbhuja*, oblong quadrangle, an oblique parallelogram; 4th *āyata-sama-lamba*, oblong with equal perpendiculars; that is, a rectangle. The second sort of quadrangle, or the tetragon with unequal diagonals (*viśama-karṇa-caturbhuja*) embraces six sorts: 1st *sama-caturbhuja*, equilateral, a rhomb; 2nd *sama-tribhuja*, containing three sides equal; 3rd *sama-dvi-dvi-bhuja*, consisting of two pairs of equal sides, a rhomboid; 4th *sama-dvi-bhuja*, having two sides equal; 5th *viśama-caturbhuja*, composed of four unequal sides, a trapezium; 6th *sama-lamba*, having equal perpendiculars, a trapezoid."⁵

To recapitulate: it has been proved conclusively that the early Hindus followed the usage of naming the rectilinear figures according to the number of sides as well as of angles. The early Greeks also followed the same practice. But while with the Greeks the side-nomenclature is older than the angle-nomenclature with the Hindus quite the contrary is the case. Amongst the Greeks the angle-nomenclature appeared after the time of Thales and his school (c. 600-500 B.C.), whereas amongst the Hindus it is found to have existed from long before in the Vedic age.

After the above had been sent to the press, Dr. Gandz has published (*Isis*, xii, pp. 452-481) a very interesting and instructive article on "The origin of angle-geometry," a section of which (§ VI) deals with the early history of the nomenclature of the rectilinear geometrical figures. His conjecture that "the observation of the corners and angles and the classification

etc. *Kātyāyana*: ii. 6. Similar use is largest in the *Āpastamba Śulba-sūtra* and least in the *Kātyāyana Śulba-sūtra*.

¹ *Āśvālayana Grhya-sūtra*

² *Bhagabati-sūtra*, Sūtra 724.

³ In the *Mahāsiddhānta* of Āryabhaṭa II (c. 950), the rectangle is called *ardha-sama-caturasra* (literally "semi-equi-quadrilateral") (xv. 67, 78, 81).

⁴ *Brāhma-sphuṭa-siddhānta*, xii. 35-38; *Ganita-sūtra-saṃgraha*, vii. 5. For the classification according to Prithudakasvāmī (860), vide Colebrooke, *Hindu Algebra*, p. 295 f.n. 1.

⁵ Colebrooke, *Hindu Algebra*, p. 58 foot note. The Sanskrit transliteration in this quotation has been altered in order to make it conform to the modern method.

according to their number seems to be distinctly Greek, a specific invention of Greek science, based upon the introduction of angle-geometry," (p. 473) will be found to be erroneous in the light of what has been stated above on the basis of the ancient literature of the Hindus.

Some Reflections on Zoological Research in India

By BAINI PRASHAD

The title of this paper may appear somewhat misleading, for I do not propose inflicting on you to-day a sermon on what are well-known facts to most zoologists who have given any time and attention to research. My object in reading this paper to-day is to draw your attention to various pitfalls and obstacles which abound in the way of young workers who start original zoological research either for the sake of preparing a thesis for some examination or to start on a career of research. I do not propose to lay down various "rules of thumb", which will make zoological research quite simple and easy; but from my experience of the past fourteen years, during which time I have had exceptional opportunities of studying not only the difficulties and deficiencies of young students but also of helping a fair number of young workers and doing some work myself, I believe that it is possible to indicate what is lacking.

With a young worker the selection of the subject for his research is the first consideration. In this connection professors, teachers, or supervisors can help a great deal, but, so far as can be judged from the results, very little attention seems to be paid to this very important issue. There is no dearth of problems in India; the field is very wide, and the problems awaiting investigation are not only innumerable but varied and suited to the capacities and tastes of almost all types of workers. It should not, therefore, be a matter of any great difficulty to find something that will suit a worker, but the type of work, which is mostly sent for publication or in connection with which students often come to the Indian Museum for consulting either the literature or the collections, leaves little reason to doubt that students had started work without considering either their own capabilities or the resources which they could possibly have at their disposal for carrying out a certain piece of research. For example, several workers start on taxonomic investigations on a group or a class of animals without being acquainted with or having for reference even the most essential monographic works on the group. They have never examined any big named collections and often do not have even a single authentically named specimen of any genus or species for comparison or to help them to understand the short and often very technical descriptions

material identified beforehand. The Zoological Survey of India is always ready to help in this connection and the students are themselves to blame if they do not take advantage of the proffered help.

Considering next the names of the different animals, it has to be remembered that the acceptance or rejection of names is not left to any author's fancy, for if this were the case the science of Zoology would soon reach a stage when it would be difficult, if not impossible, for any worker to understand the writings of other authors, and since taxonomic zoology has a world-wide application, systematists have attempted at various times to adopt rigid rules of nomenclature. In accordance with these rules an animal can have only one name; a name that is valid not only in the country where it is proposed but all over the world. Linnaeus¹, the father of modern biological nomenclature, apprehending the necessity of a taxonomic standard, proposed in 1751 a set of rules for giving names to plants and animals. This Linnean code was naturally not very complete and various efforts have been made to improve it. The most important set of rules in this connection and to which zoological science owes a great deal was the so-called Stricklandian Code, or the British Association Code². It was prepared at the instance of the British Association for the Advancement of Science in 1842 and was adopted by Section D (Zoology) of the British Association at its meeting of 1842; these rules were later revised in the meeting of the British Association in 1865.³ Dall⁴, in 1877, prepared an excellent set of rules at the instance of the American Association for the Advancement of Science. It is not necessary to consider the special code which was adopted in 1885 by the American Ornithologists' Union⁵, as it was very limited in its application. The first code of nomenclature to be adopted by an International Committee was proposed by Blanchard⁶ at the first meeting of the International Zoological Congress at Paris in 1889. The proposed code was slightly modified at the

¹ Linnaeus, E. C.—*Philosophia botanica* (Holmiae, 1751). This was republished by Agassiz in his *Nomenclator Zoologicus* fasc. ix, preface pp. v-xix. (Soloduri, 1846).

² Strickland, H. E.—Report of a Committee appointed "to consider the Rules by which the nomenclature of Zoology may be established on a uniform and permanent basis", pp. 1-17 (London, 1842). Also printed in *Rept. Brit. Assoc. Adv. Sci.* for 1842, XII, pp. 105-121 (1843).

³ *Rept. Brit. Assoc. Adv. Sci.* for 1865, XXXV, pp. 25-42 (1866).

⁴ Dall, W. H. *Proceed. Amer. Assoc. Adv. Sci.*, XXVI, pp. 7-57 (1877).

⁵ *The Code of Nomenclature and Check-List of North American Birds, etc.* (New York, 1886).

⁶ *Compts Rend. Cong. Internat. Zool. Paris*, I, pp. 333-404 (1889).

second meeting of the Congress in 1892 at Moscow¹. In 1894 the German Zoological Society² adopted a code of its own, originally prepared by a Committee consisting of Carus, Döderlein, and Möbius, but later somewhat modified it as a result of further discussions. In 1895, the Third International Zoological Congress at Leiden³ considered the whole situation, and found that the English systematists followed the Stricklandian Code, the German systematists the German code, while the American systematists were divided between the Stricklandian, the American Ornithological Union, the Dall, and the International codes. As a result of the discussions at this Congress an International Commission of five members was appointed to study all the codes and prepare a general set of rules. The discussions were continued in the fourth meeting of the Congress, and it was not till the fifth meeting at Berlin⁴ in 1901 that the final code was adopted and published. Some difficulties still exist, for in the Stricklandian Code, referred to above, the twelfth edition of Linnaeus's monumental work *Systema Naturae*, published in 1766, was taken as the starting point for modern zoological nomenclature. In the International Rules, however, the tenth edition of the *Systema Naturae*, which was published in 1758, was adopted as the starting point for the operation of the law of priority. In spite of this most English systematists still stick to the Stricklandian code and have not adopted the tenth edition as the basis for the determination of the valid generic, subgeneric or specific names. The rules of zoological nomenclature are very clearly enunciated, and have been published *in extenso* on several occasions. A recent edition of the rules with a *resumé* of the opinions 1-90 of the International Commission in reference to the various points referred to this body for opinion, was published in 1926⁵ in the Proceedings of the Biological Society of Washington, while the complete set of opinions is published by the Smithsonian Institution of Washington in America in various volumes of its miscellaneous collections.⁶

In this connection attention may also be directed to the fact that owing to the absence of scientific periodicals during the

¹ *Cong. Internat. Zool. Moscou*, II, pt. ii, pp. 1-83 (Moscou, 1893).

² *Verhandl. Deutsch. Zool. Gesellsch.*, IV, *Jahresversam.* pp. 36, 37 (1894). The rules were published in the previous volume of the same work, pp. 89-98 (1894).

³ *Comp. Rend. Trois. Cong. Internat. Zool.* pp. 93-95 (Leyde, 1896).

⁴ *Verhandl. V. Internat. Zool. Congr. Berlin*, pp. 964-972 (Jena, 1902). The same rules in German and French are published on pp. 935-960.

⁵ *Proc. Biol. Soc. Washington*, XXXIX, pp. 75-103 (1926).

⁶ The above historical account is partly based on Stile's admirable review in *United States Treasury Department, Hygienic Laboratory Bulletin*, No. 24, pp. 7-9 (1905).

latter half of the eighteenth and first half of the nineteenth century, works were either published in some obscure journals, or what was worse, as separate books, catalogues, or lists, of very limited editions and of which unfortunately copies are not available except in a few libraries or private collections. The validity of such works is often a matter of great doubt, and there can be no doubt that they have in several instances caused endless confusion in zoological nomenclature.

Another difficulty is in reference to the selection of names for new genera and species. For a long time work in this connection was almost hopeless, for one could never be certain whether a name had already been used in literature or not. Thanks, however, to the works of Agassiz¹, Marschall², Scudder³, Waterhouse⁴, the *Zoological Record*⁵ and the *Nomenclator Animalium generum et subgenerum*⁶, it is now possible for workers to find out what names are preoccupied. Even with the information available in these works the labour involved in hunting up old names is so colossal that it is not easy, except for people exceptionally fortunate in having extensive reference libraries at their disposal, to find out the names that have previously been used. For the names of species the work is still more difficult, though thanks to the herculean labours of Sherborn in the preparation of his wonderful work, *Index Animalium*⁷, the task has been made considerably lighter.

There can be no doubt that the search for the correct names of genera and species has often been carried a little too far, and in trying to clear the confusion the authorities concerned have often made the state of affairs much worse.

¹ Agassiz, J. L. R. *Nomenclator Zoologicus*, etc. Fasc. i-x (Soloduri, 1842-46) and *Nomenclatoris Zoologici Index Universalis* (Soloduri, 1846).

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All the same except for the *nomina conservanda*¹ correct names in accordance with the provisions laid down in the International Rules must be used.

The nomenclature of types and their location is another source of trouble. According to the rules of the Zoological Nomenclature types must be deposited in some recognized institution where they will, if necessary, be available to future workers for reference. This is a point which deserves special consideration in India, for unfortunately most of the young workers do not realize that the absence of such material may cast doubts on the authenticity of their results.

The young workers will, in view of what has been said above, do well to leave taxonomic work alone unless they are working at a place where well-equipped reference libraries and big named collections of different groups are available. The description of new species or genera is not of much value unless it is properly carried out, while many of the so-called revisions of different families of animals, which are published now-a-days, simply make the already unwieldy literature more cumbersome. It is, therefore, advisable for young workers to devote their energies in the beginning to other more profitable lines of research and reserve taxonomic work for a much later stage in their career when they have had some experience and have better opportunities for such work.

Work on morphological, histological, cytological, ecological and other similar problems is much simpler, in so far as extensive literature is not always required for reference nor are big named collections essential for comparison. Before starting work on any problem, it is necessary to be certain that the work has not already been done, for the adage "there is nothing new under the Sun" is nowhere more truly applicable than in the case of any problem which a young student proposes to investigate. Many supposed new problems are on looking up the literature found to have been worked out in detail already. I know of cases where excellent work had been done, but which was practically of no value owing to the same work having been published many years before.

In reference to looking up literature I would suggest the following procedure; which I adopt myself and which has almost always proved quite efficient in getting together the necessary literature. I first look through various textbooks and standard books of reference like Sedgwick's Textbook of Zoology, Cambridge Natural History Series, Ray Lankester's Treatise on Zoology, Lang's Textbook of Comparative Ana-

¹ A list of the *nomina conservanda* was prepared by Apstein and his collaborators in 1915 and is published in *Sitzungsber. Gesell. Naturfor. Freunde Berlin*, pp. 119-202 (1915). This list, however, is not recognized by the International Commission of Zoological Nomenclature.

tomy, Delage & Herouard's *Traité de Zoologie Concrete*, Claus-Grobbe's *Lehrbuch der Zoologie*, Kükenthal's recent *Handbuch der Zoologie*, and, above all, H. G. Brönn's *Die Klassen und Ordnungen des Thierreichs*¹. All these works contain extensive bibliographies on the different classes of animals, and one is sure to find in them some sort of monographic work in which most of the earlier literature on any particular subject is collected up to a certain date. In case of no monographic works being available, the best course is to start systematically and in this connection the best procedure is to look up first Engelmann's three volumes in *Bibliotheca Zoologica*² in which classified lists of literature on all groups of the Animal Kingdom from 1700-1860 will be found. The work is still in course of publication and the later volumes deal with the works published after 1860, but these recent volumes are not so exhaustive as the earlier ones. From 1864 onwards most of the Zoological literature is classified in the annual issues of "Zoological Record", but unfortunately this work has not been able to maintain its earlier standard, and the recent volumes do not include references to all the work that is published in various countries and in different journals or books. In addition to the above, therefore, one has to consult Abteilung B of Wiegmann's "Archiv. für Naturgeschichte"³, "Zoologischer Anzeiger"⁴ and "Zoologischer Jahresbericht"⁵.

¹ This work was started under the editorship of H. G. Brönn in 1859 and is still being published by the Akademische Verlag, Leipzig. A large number of volumes of this work dealing with almost all classes of animals have been published already.

² Engelmann, W. *Bibliotheca Historico-Naturalis*, Vol. I (1846) deals with the literature published during 1700-1846. Vols. II & III by J. V. Carus and W. Engelmann are for 1846-1860 (1861). Further volumes were prepared by O. Taschenberg and 7 complete volumes and 3 parts have been published so far. The name of the work from Vol. II onwards was changed to *Bibliotheca Zoologica*.

³ In Vol. I, published in 1835, the literature lists for 1834 were included but from Vol. II onwards a second volume was devoted to this work. At present, this volume is called Abteilung B, and usually 2-3 volumes are published every year. Several volumes of Abteilung B, though published, have not been issued so far, and the work since the War is very much out of date.

⁴ In Carus's *Zoologischer Anzeiger* which was started in 1878 a literature list on different classes of animals used to be published in each volume. This was discontinued with the foundation of the "Bureau international bibliographique de Zurich" in 1896, which institute under the capable management of D. H. H. Field started publishing Index Cards of Literature. The entire list was also published as *Bibliographia Zoologica* in a supplementary volume to *Zoologischer Anzeiger* every year.

⁵ This work was started in 1879 by Dr. A. Dohrn, the founder of the Zoological Station at Naples. It differs from other works in that it contained summaries of the more important works. The last volume for 1913 was published in 1924 and the publication has since been discontinued.

One must also look up most of the current zoological literature to find out whether anything on the subject has been published within recent years, and in this connection the reviews published in such works as "Nature", "Zoologische Berichte", "Journal of the Royal Microscopical Society", "Anatomischer Anzeiger", "Review of Applied Entomology", and several other journals are of great help. The recently started serial, "Biological Abstracts", should, when the work is fully organized, also prove very helpful.

According to some authorities it is not necessary to look up previous work till the research one is doing has been completed. I, on the other hand, have found that it saves a great deal of worry and unnecessary work if one has gone through the relevant literature on the subject in good time. It is then possible not only to complete the work in a much shorter time, but also to pay more attention to the lines in which the previous work is faulty.

It is very difficult to lay down the limits to be assigned to the discussion of the previous work. In this connection young students will find it very valuable to read through some contributions by a few of the leading authorities in some standard zoological periodicals. This will enable them to adopt the best method of discussing the literature and to decide the limits of such discussions. This is particularly necessary, as young workers often include long extracts and summaries of previous work, which have no bearing on the subject, while most of the really important literature is only casually treated. There are also several instances of young authors including discussions of general problems which they cannot justify from the results of their work; naturally such discussions and conclusions are often not only unjustified but in most cases are of no value whatever. In this connection Dr. Annandale's Presidential Address which he delivered before the Zoology Section of the Indian Science Congress at Madras in 1922,¹ should be studied carefully by young workers; it contains most valuable hints on how a paper should be prepared.

The question of citing the literature in a paper is rather difficult, as different methods are adopted by different periodicals, but a worker must follow the method which is in vogue in the journal where he proposes to publish his work; above all, he must be consistent. It is also necessary to exercise great care in giving correct titles of all references, and, save in very exceptional cases, references should not be included to works which one has not been able to consult.

¹ Annandale, N. *Ethic of Zoology. Proc. IX Indian Science Congress*, pp. 79-91 (Calcutta, 1923).

Another aspect of the work, which I propose considering here, is the mechanical preparation of the manuscript. During the periods of my editorship of the two leading zoological journals in this country and while acting as referee on papers offered to other societies for publication I have found that several of the so-called finished products of research were, owing to the careless way in which these had been made "press-ready", full of mistakes that could easily have been corrected by the authors themselves. This carelessness not only makes the work of the editor almost impossible, but often on the score of time and labour necessary to bring them to a standard fit for publication, makes him reject such communications. If in exceptional cases the editor has been indulgent enough to accept some papers and do the work of editing or rather rewriting them, it should not be inferred that he will always do so. In fact he will, owing to what he has had to do in one instance, be more careful in the future, and refuse any works that are not in a finished form. In this connection I may perhaps be excused for quoting from the presidential address of the late Dr. N. Annandale referred to above.

"Apart from literary style in the writing of zoological papers, the question of the mechanical preparation of the manuscript for the press is one of ethical significance. As the editor of the *Record* (*sic Records*) and *Memoirs of the Indian Museum* I often receive manuscripts that need many hours' careful and troublesome work before they can be sent to the printer. If it were not for the fact that Dr. Kemp is kind enough to relieve me of much of this drudgery, I would scarcely hesitate to refuse to consider a great part of the matter submitted for publication. Carelessness or ignorance as to punctuation and the use of capitals is rife, and few authors take any trouble in indicating the use of italics or other special type. It is surprising how few zoologists know even such elementary rules as that of the proper use of brackets with the names of the authors of species. These names should never be enclosed in brackets, unless the name of the genus of the species had been changed since the latter was first described. These may seem trivial points, but their neglect indicates not only carelessness, but selfishness and lack of understanding."

In spite of the above sound advice I find that little attention is paid to the mechanical preparation of the paper, and as a result several excellent contributions lose a great deal in value. The authors, further, owing to not properly preparing their manuscripts are, besides being dubbed selfish and careless, responsible for delay in the publication of their results.

Attention must also be paid to the careful preparation of illustrations which are to be published in a contribution.

Unnecessary figures should be avoided, as, owing to the great cost of reproduction now-a-days, few societies or journals can publish a large number of figures or plates. The drawings should be clear, simple, and as true to nature as possible, and should be finished in a style fit for reproduction.

I am afraid I have given you a somewhat disjointed account of what is often lacking in the original zoological work that is being carried on now-a-days in India. I have tried to indicate what kind of work should not be attempted unless facilities for carrying it out properly are available, how literature should be looked up, and have also dealt with the question of the mechanical preparation of the manuscripts and the illustrations. I have devoted a great deal of my remarks to systematic work and the strict observance of the International Rules of Zoological Nomenclature, as it is in connection with these that most of our young workers make mistakes. I shall feel fully repaid if these suggestions help young workers in their work and result in their paying more attention to what are considered, by some, trivial points, but which really determine to a very great extent the value and usefulness of any original research.

Notes on the Arterial System of the common Indian
Toad *Bufo melanostictus* Schneid

By JNANENDRA LAL BHADURI

(Read at the Meeting of the Sixteenth Indian Science
Congress, and published with the permission of the
Director, Zoological Survey of India.)

I. INTRODUCTION.

Bufo melanostictus Schneid. is one of the commonest Indian toads and is used for dissection as a type of the Anura in several Indian Universities. The general anatomy of *Bufo* corresponds to that of *Rana*, but there are several differences which are so marked that practical note books containing descriptions of *Rana* are of no value for dissections of *Bufo*. During my tenure of office as a Demonstrator in Zoology in the University of Calcutta, I investigated the vascular system of *Bufo melanostictus*. In the course of my work on the arterial system I observed some constant and marked differences, mainly in reference to the branches of the systemic arches and the dorsal aorta from the other types of Anurans which have been described so far. Since these differences have not been noticed in any other type, a general illustrated account of the arterial system will, I hope, prove useful. In the following account, however, no attempt is made to treat in detail the various arteries but only the general course of the arteries, as is followed in practical classes, is described.

No account of the vascular system of *Bufo* was published previous to the short notice in Crawshay's paper (2) on the variations in the arterial systems of the Anurans. His remarks in reference to the genus *Bufo* were based on dissections of one specimen each of *Bufo boreas* and *Bufo mauritanicus*, and according to him the toads of this genus do not markedly deviate from the frogs of the genus *Rana*.

The only other work, which refers to *Bufo melanostictus*, is that of Ghosh in his elementary account of the anatomy of some common Indian Vertebrates (4), but his account of the vascular system of this toad is rather incomplete, while the drawings are far from satisfactory.

I have here to record my sincere thanks to Dr. Baini Prashad, Officiating Director of the Zoological Survey of India, for his kind criticism, assistance and valuable suggestions.

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In several dissections to a great deal of variation in *melanostictus* this artery is in the *canalis caroticus*, as in *mauritanicus*, while in other species the arteries arising separately from the anterior trunk other from the anterior trunk impar for supplying the

1. Carotid

Of the three arteries the carotid arch (c.a.) is the largest of the head and the base of its origin from the carotid trunk and almost spherical which is often referred to as the

AND METHOD.

In examination of a large number of *melanostictus* collected in the chief peculiarities were demonstrated to the practical utility.

In studying the main arteries is after and Parker (*loc. cit.*, p. 99). The arteries were washed with normal saline and were later injected through the

THE ARTERIAL SYSTEM.

truncus arteriosus (Fig. 1).

(i) Esophagus

It is necessary to preface my account of the conus arteriosus and the

Just before expansion gives off a slender branch for the lingual artery which runs inwards and forwards to the thyroid branches to the thyro- and its associated muscles of the tongue.

(ii) Aorta

The main artery continued as the internal carotid artery of most species, a very short distance between the petrosal artery lying in between the petrosal compressed in both in the middle can be seen by careful dissection. Emerging from the trunk in close proximity to

(c.a.), as in all Anurans, arises anteriorly from the right side of the trunk, passes obliquely forward across the trunk, its walls are not so thick as the conus, though not very distinctly a continuation which is termed the truncus arteriosus, considered to terminate at the base whence a very short tubular artery of small diameter runs forward; this (loc. cit., p. 277) terms the truncus arteriosus. The truncus impar bifurcates into two trunks, the truncus dexter (t.d.) and the truncus sinister (t.s.). Each of these trunci consists of a very short distance in a common sheath, but is divided by a single vessel, but is divided by three chambers which are known as the *canalis aorticus*, and the *canalis subaorticus*, forming a short distance the three trunks form the beginnings of the three main arteries, the carotid (c.a.), the systemic (s.a.) and the pulmonary (p.a.).

¹ Hyrtl, as mentioned the origin of this artery from the base of the trunk and also from the truncus arteriosus has been confirmed by Gaupp (1871), who has, however, shown that the origin of the carotid artery in groups of Anura. He found that in *R. catesbeiana* it arises from the base of the trunk, in *R. hexadactyla* from the base of the trunk, and in *R. boreas* from the base of the trunk, and in *R. temporaria* from the base of the left c.

It is rightly considered the conus and the truncus arteriosus (6), Ghosh (4) and several others have joined the two together under the term truncus

Bulbis cordis artery (Fig. 1). Before describing the arteries of the three great arterial arches it is convenient to consider here the artery which supplies the conus arteriosus (*co.a.*). It is called the bulbis cordis artery (*b.c.a.*). It arises from the ventral root of the right canalis caroticus

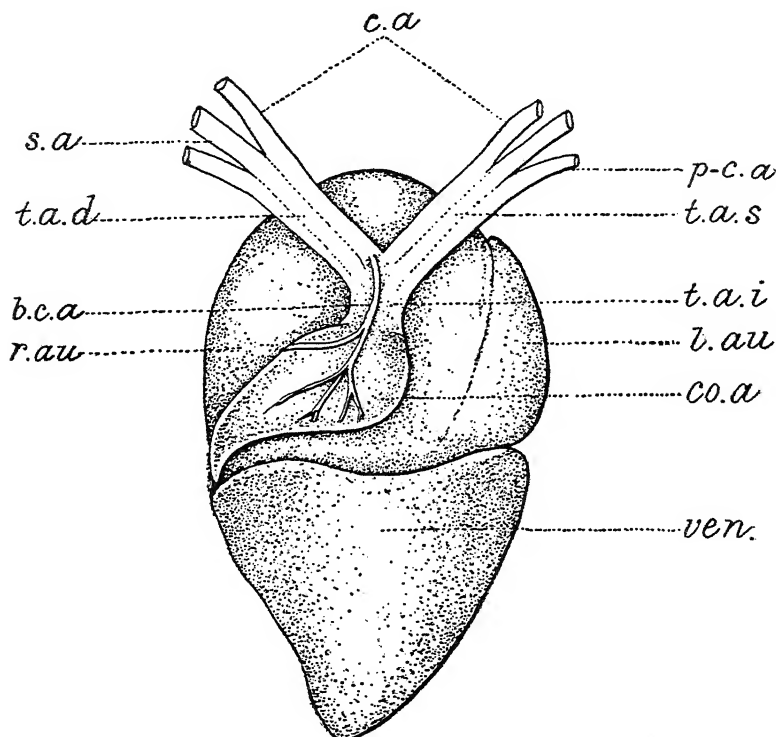


FIG. 1.—Ventral aspect of the heart and arterial arches of *Bufo melanostictus*.

b.c.a.—bulbis cordis artery.
c.a.—carotid arches.
co.a.—conus arteriosus.
lau.—left auricle.
p-c.a.—pulmo-cutaneous arch.
rau.—right auricle.

s.a.—systemic arch.
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and runs backwards over the truncus arteriosus impar (*t.a.i.*) to reach the anterior end of the conus. Here it divides into two main branches which supply the ventral and dorsal surfaces of the conus arteriosus. Bulbis cordis artery is, as is usually seen in the frogs, distributed on the conus only and is not seen to proceed beyond it.

and nearly overlaps it about the origin of the subclavian and the occipito-vertebral arteries (Fig 8, *sub.a.* and *oc-v.a.*). These two arteries here are enclosed in a common sheath of tissue which may be called ligamentum caroticum¹ (Fig 8, *l.c.*). The internal carotid artery (*i.c.a.*) then takes a very sharp bend

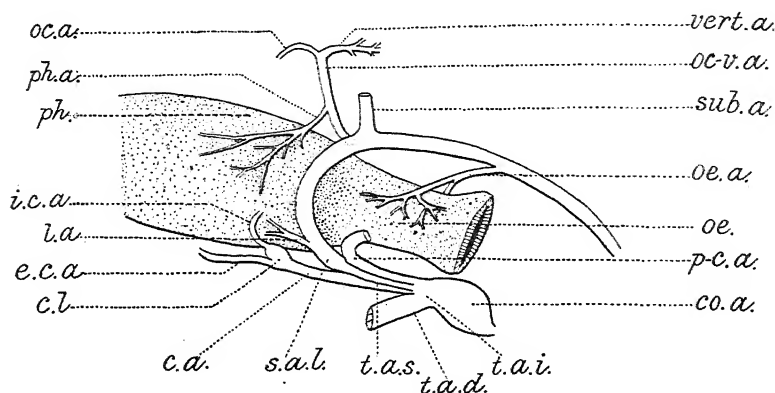


FIG. 2.—Lateral view of the anterior arterial system seen from the left side.

c.a.—carotid arch.
c.l.—carotid labyrinth.
co.a.—conus arteriosus.
e.c.a.—external carotid artery.
i.c.a.—internal carotid artery.
l.a.—laryngeal artery.
oc.a.—occipital artery.
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vert. a.—vertebral artery.

and runs inwards, forwards and dorsal to the pharynx to enter into the posterior angle of the orbit. It is to be noted that this artery from its origin to its entry into the skull, sends no branch whatsoever to any part of the surrounding tissues.

¹The ligamentum caroticum has escaped the notice of most authors. It was noticed by Bourne (1) and Marshall (7) who described it as an impervious condition of the ductus Botalli. Gaupp (3), again, described it as an obliterated ductus arteriosus. It should, however, be noted that the embryonic connection between the systemic and the carotid is neither the ductus Botalli nor the ductus arteriosus, but is the true ductus caroticus. This discrepancy in nomenclature was clearly pointed out by O'Donoghue (8) in Reptiles where the embryonic connection of the different arches is very often retained in the adults.

II. MATERIAL AND METHOD.

This account is based on an examination of a large number of injected specimens of *Bufo melanostictus* collected in Calcutta. The observations on the chief peculiarities were further substantiated during my demonstration to the practical classes of the Calcutta University.

The injected fluid used for studying the main arteries is the one recommended by Parker and Parker (*loc. cit.*, p. 99). Before injecting the fluid the arteries were washed with normal saline solution and the vessels were later injected through the ventricle via the conus.

III. DESCRIPTION OF THE ARTERIAL SYSTEM.

Conus arteriosus and Truncus arteriosus (Fig. 1).

To avoid confusion it is necessary to preface my account with a short description of the conus arteriosus and the truncus arteriosus.

The conus aretriosus (*co.a.*), as in all Anurans, arises ventrally and somewhat anteriorly from the right side of the ventricle (*ven.*), and then passes obliquely forward across the auricles. It is muscular, but its walls are not so thick as those of the ventricle. The conus, though not very distinctly marked off from its further continuation which is termed the truncus, can, however, be considered to terminate at the slightly constricted region whence a very short tubular structure of almost uniform diameter runs forward; this corresponds to what Gaupp (*loc. cit.*, p. 277) terms the truncus arteriosus impar (*t.a.i.*). The truncus impar bifurcates into two trunks, a right and a left, which have respectively been termed as the truncus arteriosus dexter (*t.a.d.*) and the truncus arteriosus sinister (*t.a.s.*)¹. Each of these trunci consists of three vessels enclosed for some distance in a common sheath and appears externally as a single vessel, but is divided by two internal partitions into three chambers which are known as the canalis caroticus, the canalis aorticus, and the canalis pulmo-cutaneous. After running a short distance the three canicular vessels separate to form the beginnings of the three main arterial arches *viz.* the carotid (*c.a.*), the systemic (*s.a.*) and the pulmo-cutaneous (*p-c.a.*).

¹ In spite of Gaupp (3) having rightly considered the conus and the truncus as two distinct structures Marriner (6), Ghosh (4) and several other authors have described the two together under the term truncus arteriosus.

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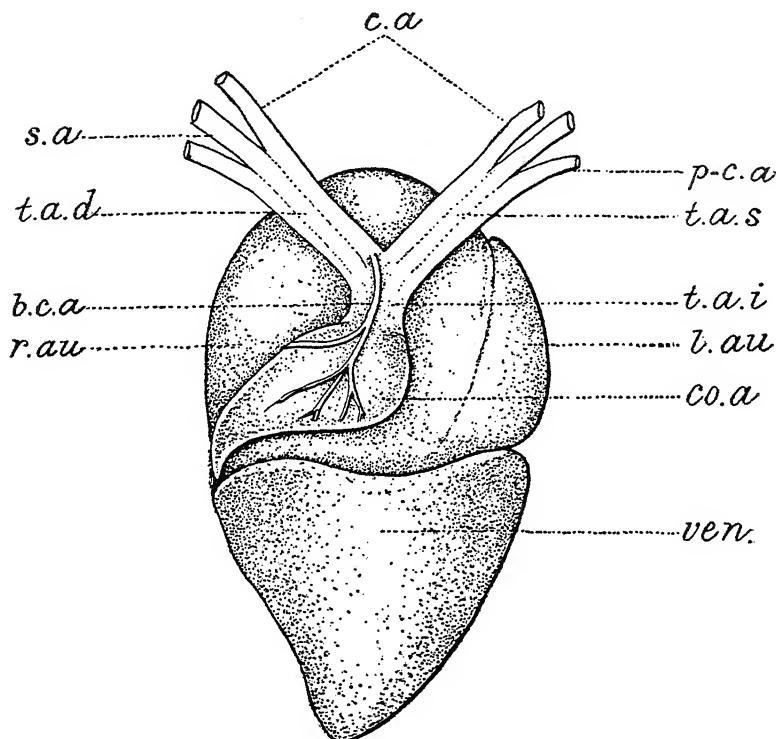


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In several dissections I found that this artery was liable to a great deal of variation. In two or three specimens of *Bufo molanostictus* this artery was found to originate from the left canalis caroticus, as observed by Crawshay (2) in *Bufo mauritanicus*, while in another specimen there were two arteries arising separately, one from the normal position and the other from the anterior point of bifurcation of the truncus impar for supplying the conus walls.¹

1. Carotid arch (Figs. 2 and 8).

Of the three arterial arches the most anterior one, the carotid arch (*c.a.*) is concerned with the blood supply of the head and the brain. Each carotid arch shortly after its origin from the canalis caroticus swells out into a small and almost spherical bulging, the carotid labyrinth (*c.l.*) which is often referred to as 'carotid gland' in literature.

(i) External carotid artery.

Just before expanding into the carotid labyrinth the arch gives off a slender branch—the external carotid artery (*e.c.a.*) or the lingual artery of various authors. It runs ventrally inwards and forwards over the throat, and sends several branches to the thyroid glands, the hyoid apparatus and its associated muscles, while its main trunk supplies the tongue.

(ii) Internal carotid artery.

The main artery from the carotid labyrinth (*c.l.*) is continued as the internal carotid artery (fig. 8, *i.c.a.*)—the carotid artery of most authors. It runs superficially for a very short distance and then curves round immediately between the petrohyoideus muscles. The portion of the artery lying in between these muscles was found to be greatly compressed in both injected and uninjected specimens; this can be seen by carefully removing the petrohyoideus muscles. Emerging from the muscles it runs round the oesophagus in close proximity to the systemic arch (*s.a.r.* and *s.a.l.*)

¹ Hyrtl, as mentioned by Gaupp (3), was the first to observe the origin of this artery from the ventral root of the canalis caroticus dexter and also from the truncus arteriosus dexter in *Bufo vulgaris*. This has been confirmed by Gaupp in *Rana esculenta*. Crawshay (2) has, however, shown that the origin of this artery is very variable in the different groups of Anura. He found that in *Rana tigrina*, *R. clamata* and *R. catesbiana* it arises from the base of the right canalis caroticus; in *R. hexadactyla* from the same canal but close to its margin; in *Bufo boreas* from the base of the right canalis aorticus, and in *B. mauritanicus* from the base of the left canalis caroticus.

and nearly overlaps it about the origin of the subclavian and the occipito-vertebral arteries (Fig 8, *sub.a.* and *oc-v.a.*). These two arteries here are enclosed in a common sheath of tissue which may be called ligamentum caroticum¹ (Fig 8, *l.c.*). The internal carotid artery (*i.c.a.*) then takes a very sharp bend

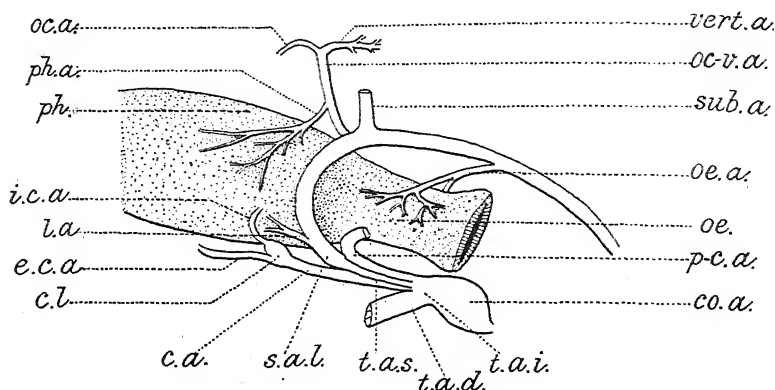


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2. Systemic or Aortic arches (Figs. 2 and 8).

The median arch of each side is known as the systemic or aortic arch (*s.a.*) of that particular side. Each arises from the canalis aorticus and winds obliquely round the oesophagus and then turns inwards and backwards to join its fellow from the opposite side in the middle line at about the level of the sixth vertebra. The right systemic arch is continued as the dorsal aorta (Fig. 8, *d.a.*) which runs backwards in the body cavity just ventral to the vertebral column and between the kidneys to about the middle of the urostyle where it bifurcates into the two iliac arteries (fig. 8, *i.a.*). The left systemic arch, after its union with the right arch, continues as the coeliaco-mesenteric artery (Fig. 8, *c-m. a.*).

In *Bufo melanostictus* the number of branches given off from the two systemic arches is different. Four arteries arise from the left systemic arch (*s.a.l.*) and only three from the right (*s.a.r.*), there being no oesophageal branch on the right side. It will, therefore, be convenient to describe here the different branches of the left systemic artery.

(i) Laryngeal artery.

The laryngeal artery (*l.a.*) is a short and stout vessel. It arises from the inner border of the systemic very near to its origin from the canalis aorticus. It passes dorsal to the carotid labyrinth (*c.l.*) to supply the larynx and its muscles.

(ii) Occipito-vertebral artery.

The occipito-vertebral artery (*oc-v.a.*) arises from the dorsal side of the systemic arch close to the origin of the subclavian artery (*sub.a.*) and opposite the transverse process of the second vertebra. It runs slightly forwards and inwards into the back muscles between the atlas and the skull. It then divides dorsally, as in *Rana*, into the occipital and the vertebral arteries (Fig. 2, *oc.a.* and *vert.a.*). The most interesting feature in the course of the occipito-vertebral artery is that at a point about half-way between its origin from the systemic and its entry into the back muscles, it gives off a branch which runs backwards and upwards to supply the dorsal region of the pharynx. This may conveniently be called as the *pharyngeal artery*¹ (Fig. 2, *ph.a.*).

¹ This pharyngeal branch of the occipito-vertebral artery has not been described in any Anurans so far. Crawshay (2) shows the oesophageal artery in several species of *Rana* and *Bufo* as originating from the base of the occipito-vertebral artery to supply the oesophagus. This condition was found by me in dissections of the common Indian frog *Rana tigrina*, but in *Bufo melanostictus* the origin of the oesophageal artery is quite different; this is described in detail further on.

(iii) *Subclavian artery.*

The subclavian artery (*sub.a.*), which is very stout, is the largest of all arteries arising from the systemic arch. It originates from the external border of the arch immediately behind the occipito-vertebral artery (*oc-v.a.*) and runs straight outwards alongside the brachial nerve. The pectoral girdle and the forelimb are supplied by several branches which vary greatly in number and distribution in different specimens.¹

(iv) *Oesophageal artery.*

The oesophageal artery (*oe.a.*) is the last and the smallest of all the arteries arising from the left systemic arch (*s.a.l.*). As noted already it is present only on the left side, there being no corresponding branch from the right systemic. This artery arises from the inner border of the left systemic nearly half-way from the origin of the subclavian artery (*sub.a.*) and the union of the right and left systemics. The part of the oesophagus (*oe.*) which lies between the two systemics is fed by this artery. In one solitary instance only, during class demonstration, I found the oesophageal artery originating from the right systemic arch, and there was, however, no corresponding artery on the left side.

It is also of interest to note here that in the other Indian toad *Bufo stomaticus* also there is only a single oesophageal artery which originates from the left systemic arch in almost the same position as in *Bufo melanostictus*.²

¹ Crawshay (2) who has described the variations of the branches of the subclavian artery in different species of *Rana* and *Bufo*, and has also noted the extent of variation in different individuals of *Rana temporaria*, is of opinion that "a careful examination of a large number of individuals is still necessary to establish a satisfactory type of arrangement for the Anurans".

² Reference has already been made to the origin of the oesophageal arteries in frogs. They always arise from the two systemics in all the different types of Anura described by Crawshay (2) and other authors. The single origin of the oesophageal artery from the left systemic arch alone except in the two species of *Bufo* mentioned above has, however, not been observed in any Anura so far, and does not appear to be common in most forms. But very recently Rau (12) speaking of the origin of the oesophageal artery in *Ceratophrys* with reference to Crawshay's observations remarks that it "arises from a different level almost midway between the subclavian artery and the root of the dorsal aorta". The origin of this artery no doubt shows a similar position as in *Bufo*, but he does not mention particularly whether this is present only on the left side although his drawing (*loc. cit.*, fig. 1, p. 307) shows a single left-handed origin.

(a) Coeliaco-mesenteric artery (Fig. 3).

The coeliaco-mesenteric axis (*c.-m.a.*) is a large unpaired artery which arises from the point of union of the two systemic arches (*s.a.r.* and *s.a.l.*) and supplies the alimentary canal and its various appendages. After a short simple course it divides into two main branches, an anterior coeliac artery (*coel.a.*) and a posterior mesenteric artery (*mes.a.*). The latter name is suggested in view of the total absence of any posterior mesenteric artery as such which is commonly found in the frogs.

(1) Coeliac artery.

The coeliac artery (*coel.a.*) is not so large as its sister branch, the mesenteric. It supplies the whole of the stomach (*st.*), the liver, the gall bladder, and the greater part of the pancreas. The coeliac artery divides into two main branches:

(a) The left gastric artery (*g.a.s.*) passes right up to the stomach (*st.*) and sends many fine branches to its dorsal part.

(b) The second branch is larger than the preceding in the sense that its main axis, which is called the right gastric artery (*g.a.d.*) mainly supplies the stomach, while a side branch generally styled as the hepatic artery (or rather the hepato-pancreatic artery) is given off to the liver. In its course it sends several fine branches to the pancreas (*p.a.*), and after reaching the liver it gives off two to three small branches to the gall bladder and finally breaks up in the substance of the liver into numerous ramifications.

(2) Mesenteric artery.

The mesenteric artery (*mes.a.*) is, as usual, a long and large artery. It supplies the spleen and the whole of the intestine (*int.*) including the rectum (*re.*). The first branch given off from this axis is the splenic artery (*spl.a.*) to the spleen. Generally the splenic artery arises from the mesenteric artery before any other intestinal arterial branches, but quite often it arises from the distal ramus of the intestinal arterial branch as was shown by Crawshaw (2) to occur in some species of *Rana* and in *Bufo mauritanicus*.

The mesenteric artery can conveniently be divided into two main branches, of which the first or the proximal is chiefly concerned with the blood supply of the duodenum and the anterior part of the intestine. The distal branch is, however, a much ramifying stem which divides in the mesentery into a variable number of large and small vessels, which by further sub-divisions supply the rest of the intestine including the rectum as shown in the diagram.

Mention may be made here of the fact that the arterial blood supply of the pancreas is not derived entirely from the

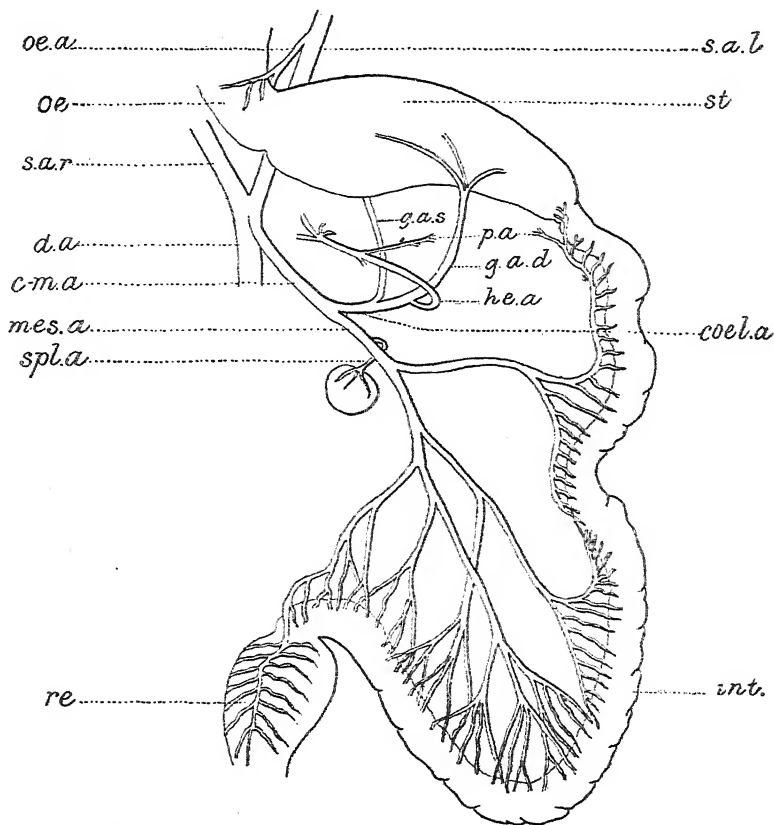


FIG. 3.—Ventral view of the arteries supplying the alimentary canal and its appendages.

c-m.a.—coeliaco-mesenteric artery.
coel. a.—coeliac artery.
d.a.—dorsal aorta.
g.a.d.—right gastric artery.
g.a.s.—left gastric artery.
he.a.—hepatic artery.
int.—intestine.
mes. a.—mesenteric artery.

oe.—oesophagus.
oe.a.—oesophageal artery.
p.a.—pancreatic artery.
re.—rectum.
s.a.l.—left systemic artery.
s.a.r.—right systemic artery.
spl. a.—splenic artery.
st.—stomach.

hepatic artery but also from a small recurrent branch arising from the duodenal section of the mesenteric artery (*p.a.*).

(b) Dorsal Aorta.

(i) *Urino-genital arteries* (Figs. 4,5,6 and 7).

The urino-genital arteries arise, as usual, by either unpaired or independent stems or both together from the ventral surface of the dorsal aorta between the kidneys. They supply the kidneys, the fat bodies, and the reproductive organs. These arteries vary in number and position, as well as in respect of unpaired and independent stems. The extent of variation of these arteries in male and female toads is shown in Figs. 4,5,6, and 7, and an inspection of these figures will do away with the necessity of a detailed description of the individual arteries.

Occasionally the first of the true urino-genital arteries arises close to the base of the coeliaco-mesenteric artery or actually from the axis itself and supplies the anterior head of the kidney. Such a condition was found by Crawshay in *Bufo mauritanicus*, and I figure (Fig. 5) a similar condition found by me in a specimen of *Bufo melanostictus*.

(ii) *Lumbar artery*.

Attention may here be drawn to the fact that the lumbar arteries which are so characteristic of frogs, are altogether absent in *Bufo melanostictus*. In certain cases, a single lumbar artery was seen to originate from the terminal section of the dorsal aorta to supply the back muscles¹ (See Fig. 4).

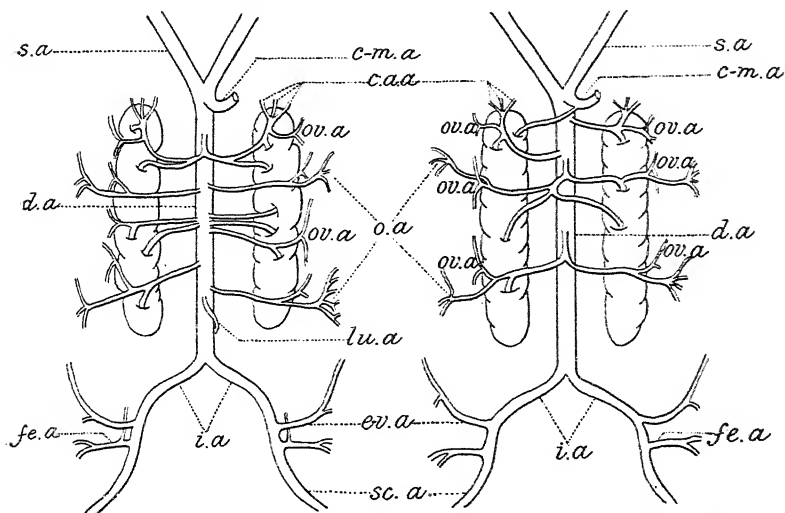
(iii) *Posterior mesenteric artery*.

No trace of the posterior mesenteric artery, which is commonly present in the Ranids, was found in *Bufo melanostictus*. In two examples of *Bufo boreas* and *Bufo mauritanicus*, Crawshay, however, showed its origin, as is usual in frogs, from the median ventral line of the dorsal aorta between the last of the urino-genital arteries and the bifurcation of the aorta, and its absence indeed is very peculiar in the Indian toad *Bufo melanostictus*.

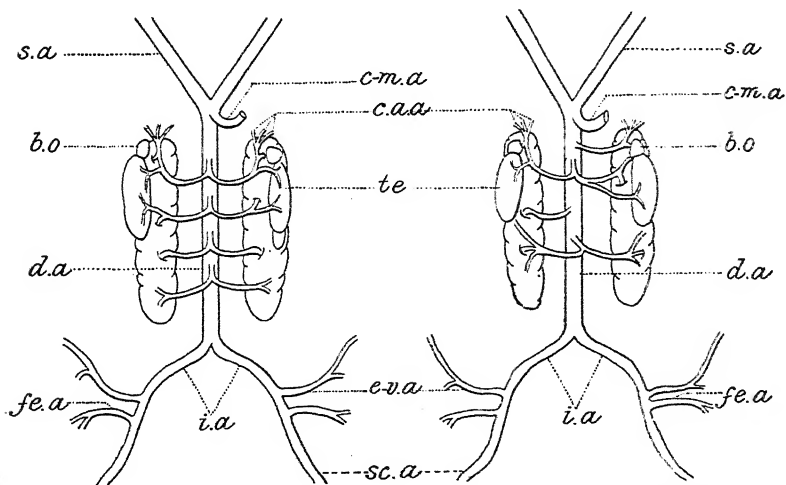
(iv) *Iliac artery* (Figs. 4,5,6,7 and 8).

As has been mentioned above, the dorsal aorta bifurcates about the middle of the length of the urostyle into two large trunks, the iliac arteries (*i.a.*). Each of the iliac arteries diverges

¹ Previous authors who have described examples of *Bufo* have not noted the absence of this artery. Crawshay (2) on the other hand, observes that "the *Aa lumbales* were not followed sufficiently for purpose of comparison."



FIGS. 4 and 5.—Ventral view of posterior arteries in female toads.



FIGS. 6 and 7.—Ventral view of posterior arteries in male toads.
Explanation of figures 4 to 7.

b.o.—Bidder's organ.

c.a.a.—corpus adiposum arteries.

c-m.a.—coeliaco-mesenteric artery.

d.a.—dorsal aorta.

e-v.a.—epigastri-co-vesicalis artery.

fe. a.—femoral artery.

i.a.—iliac arteries.

lu.a.—lumbar artery.

o.a.—oviducal arteries.

ov.a.—ovarian arteries.

s.a.—systemic artery.

sc.a.—sciatic artery.

te.—testis.

caudalwards and runs alongside the sciatic plexus towards the thigh, beyond which it continues as the sciatic artery or ischiatic artery (*sc.a.*). It sometimes runs between a nerve loop formed by the nerves of the sciatic plexus. Before reaching the thigh proper it sends off two very important arteries:

(1) *Epigastrico vesicalis artery.*

Epigastrico-vesicalis artery (*e-v.a.*) is a very stout vessel, which runs laterally and divides into numerous branches to supply the bladder and the muscles of the adjoining region.

(2) *Femoral artery.*

The femoral artery (*f.a.*) arises shortly after the above artery. It passes directly to the upper part of the thigh to supply its muscles.

In this connection it may also be noted that several grades of variations from the contiguous origin of the epigastrico-vesicalis and the femoral arteries to a distinct separation of the two have been observed in different specimens of this toad.

(v) *Ischiatic or sciatic artery.*

As mentioned above the ischiatic or sciatic artery (*sc.a.*) is the continuation of the iliac artery. It supplies the rest of the hind-limb.

3. *Pulmo-cutaneous arch* (Fig. 8).

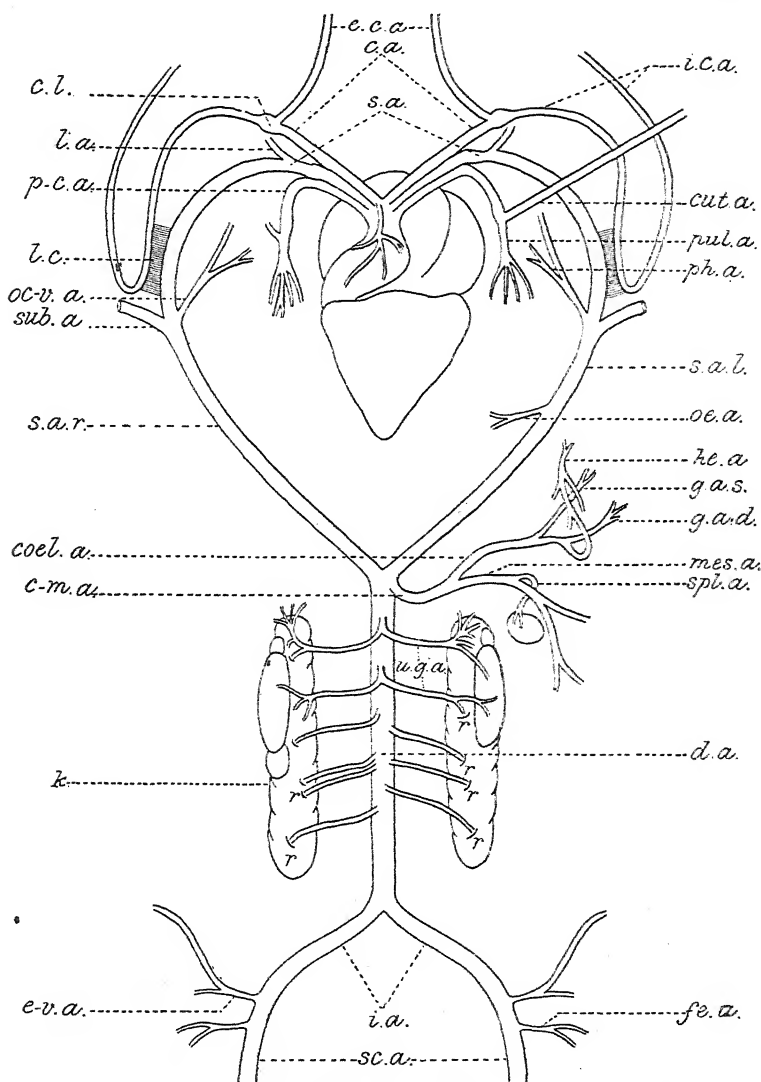
The pulmo-cutaneous arch (*p-c.a.*) is the hindmost of the three arches. It arises, as in frogs, from the pulmo-cutaneous canal and after a short simple course passes to the lung as the pulmonary artery (*pul.a.*) giving off a slender branch to the skin, the cutaneous artery (*cut.a.*). This arch carries impure blood to be purified in the lungs and the skin.

(i) *Pulmonary artery.*

The pulmonary artery (*pul.a.*) runs backwards to the root of the lungs where it ramifies into a large number of branches.

(ii) *Cutaneous artery.*

The cutaneous artery (*cut.a.*), as mentioned above, is a very slender artery. In its course it travels somewhat forwards, outwards and upwards and disappears between the angle of the jaw and the fore-limb. On reaching the skin it divides into numerous branches forming a rich anastomosis.

FIG. 8.—General course of the arterial system of *Bufo melanostictus*.

c.a.—carotid arches; c.l.—carotid labyrinth; c-m.a.—coeliaco-mesenteric artery; coel. a.—coeliac artery; cut. a.—cutaneous artery; d.a.—dorsal aorta; e.c.a.—external carotid arteries; e-v.a.—epigastrico-vesicalis artery; fe.a.—femoral artery; g.a.d.—gastric artery dexter; g.a.s.—gastric artery sinister; he. a.—hepatic artery; i.a.—iliac arteries; i.c.a.—internal carotid artery; k.—kidney; l.a.—laryngeal artery; l.c.—ligamentum caroticum; mes. a.—mesenteric artery; oc-v.a.—occipito-vertebral artery; oe.a.—oesophageal artery; p.c.a.—pulmo-cutaneous arch; ph.a.—pharyngeal artery; pul.a.—pulmonary artery; r.—renal artery; s.a.—systemic arches; s.a.l.—left systemic artery; s.a.r.—right systemic artery; sc.a.—sciatic arteries; spl.a.—splenic artery; sub. a.—subclavian artery; u.g.a.—urino-genital arteries.

IV. SUMMARY.

The arterial system of *Bufo melanostictus* differs in several respects from that of the other types of Anurans which have been described so far. In the above account the arterial system of this toad is described in fair detail, the modern revised nomenclature for different arteries being used in the description.

(i) The two structures, the conus and the truncus arteriosus, are distinguished and their relative situation distinctly outlined. The further subdivisions of the truncus arteriosus are also described.

(ii) The internal carotid artery and the systemic are enclosed in a solid strand of tissue, which from its homology with other groups is termed *ligamentum caroticum* in the above account.

(iii) A pharyngeal branch of the occipito-vertebral artery is recorded for the first time in Anura.

(iv) The oesophageal artery, unlike the condition in other Anura, is always *single* and arises from the left systemic arch. This condition has also been noted in *Bufo stomaticus*.

(v) In view of the total absence of the posterior mesenteric artery as such the term mesenteric artery is employed for the anterior mesenteric branch of the coeliaco-mesenteric trunk.

(vi) Lumbar arterias are absent in this toad, but may occasionally be present as an abnormality.

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Studies on Indian Ichneumonidæ

*The External Morphology of a Common Ichneumon-fly of
India, Xanthopimpla pedator, Fabricious*

By A. C. SEN

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Survey of India.)

INTRODUCTION

The Ichneumonidæ constitute a very important group of the parasitic Hymenoptera. They are widely distributed in India and are met with in the plains as well as in the hills. They vary considerably in size and colour, some being quite minute, others measuring as much as two inches in length. They are all parasitic and attack the eggs, pupæ, larvæ and even adult members of many orders of insects, as well as spiders, false-scorpions and centipedes. Their special prey are caterpillars, most of which are serious pests on crops, and hence the family is of great economic importance in an agricultural country such as India.

In spite of the great importance of this family, the biology of even its most common forms has not been studied in India. At the suggestion of Dr. H. S. Pruthi, Officer-in-Charge of the Entomological Section of the Zoological Survey of India, I undertook the study of the biology and life-history of this important family. As a preliminary to this study, I thoroughly examined the morphology of the common Ichneumon-fly, *Xanthopimpla pedator*, which is described in the present paper. Furthermore, with a few notable exceptions, no detailed studies have been made of Indian insects that may be used as Types by students of Zoology and Entomology in this country and the accounts available are all based on foreign species. It is, therefore, hoped that the present study will provide an account of an Indian type of the Hymenoptera, especially Ichneumonidæ.

MATERIAL AND METHODS

The specimens, on which this study is based, were all collected in the Darjeeling District in May and June of 1912, and were in the collection of the Indian Museum. A specimen was first put in 10% KOH solution for about 24 hours, washed in distilled water to which a few drops of Acetic Acid had been added, then passed through the various grades of alcohol and

finally cleared in Cedar Wood Oil. Before mounting the preparation in Balsam, all traces of oil were removed by putting it in Xylol for a few minutes. All diagrams have been drawn with the Camera Lucida.

The terminology followed in this paper is the same as that employed by Snodgrass in his work on the "Anatomy and Physiology of the Honey-Bee" (1925).

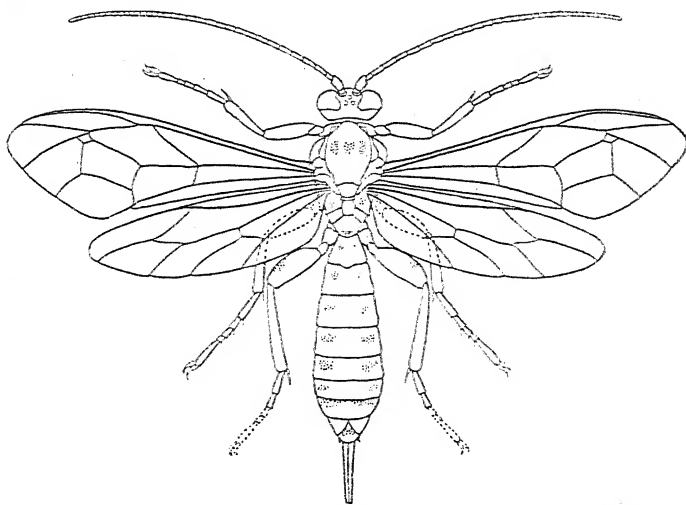
I take this opportunity of expressing my gratitude to Dr. H. S. Pruthi who supervised my work and always helped me by giving advice and by affording me facilities for carrying on my investigation. My thanks are also due to Lt.-Col. R. B. Seymour Sewell, I.M.S., Director, Zoological Survey of India, for allowing me to work in the laboratories of the Zoological Survey of India, and for kindly going through the manuscript and making necessary suggestions.

GENERAL MORPHOLOGY OF THE ICHNEUMONIDÆ

The body colouration of the Ichneumonids is mainly of the warning type, such as black, yellow or reddish-yellow, and the two sexes are often similar to each other. The different parts of the body, the head, thorax and abdomen, are quite distinct from one another. As in all other Hymenopterous insects the members of this family have two pairs of membranous wings, which are similar to each other in texture, and have veins very much reduced in number; the hind-wings are smaller than the fore-wings. The costal margin of the hind-wings bears a series of hooks or hamuli, the function of which is to grasp a ridge-like thickening along the inner margin of the fore-wings. The mouth-parts are modified for chewing and sucking purposes, a condition met with only in certain specialised members of Hymenoptera. The intermediate region of the body does not consist of thorax alone but also includes the first segment of the abdomen. This transferred segment is known as the propodeum. The thorax proper possesses two pairs of spiracles, but the presence of three pairs of spiracles in the Hymenoptera indicates the inclusion of the first abdominal segment with its spiracles in the thoracic region. The abdomen is connected to the thorax by the narrow basal half of its first segment, termed the petiole. The apparent first abdominal segment is really the second segment.

The special features by which the parasitic Hymenoptera can be distinguished from the rest of the Hymenoptera are that the second joint of the leg, namely, the trochanter, always consists of two joints, and in the Ichneumonidæ only a second recurrent nervure is present in the fore-wing. These characters will be more fully explained in the detailed descriptions of the parts given later.

In the Ichneumon-flies the head is prominent and tapers towards the mouth, the eyes are large and occupy the greater portion of the head, the ocelli are three in number and are always present. The antennae are situated between the eyes, are setaceous and many jointed, the number of joints varying from fourteen to seventy. Unlike those in the allied family Evanidae the antennae in the Ichneumon-flies are never elbowed. In some forms, a short neck is present. The thorax is broader than the other parts of the body and is well built and its three components, pro-, meso-, and meta-thorax, can be made out easily. Although the propodeum consists of the fused meta-thorax and the first segment of the abdomen, yet



Text-Fig. 1, Dorsal view of the Ichneumon fly, *X. predator*, ♀, $\times 2.7$.

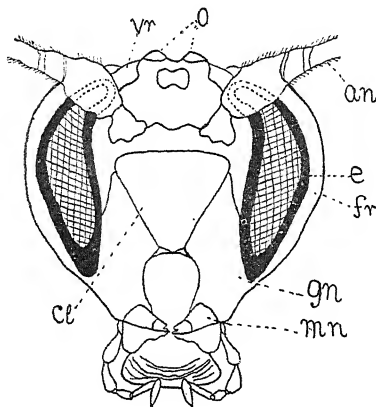
many authorities designate the whole structure as the meta-thorax. There are eight dorsal and ventral segments visible in the abdomen of the male, but in the female the number of ventral segments is reduced to six. The abdominal segments are smooth and have distinctive marks on the dorsal surface. The ovipositor is often long and is sometimes longer than the abdomen itself. It is strong and sharp, and its prick and the poison that is ejected through it from the poison gland at the base, paralyzes the prey and thus the fly safely deposits her eggs on its back or inside its body, and the young larvae that emerge from these eggs live by feeding on the juices of the paralyzed host.

MORPHOLOGY OF XANTHOPIMPLA PEDATOR

(a) The head and its appendages.

The head (fig. 1A.) is large and forms the most conspicuous part of the body. It is pale yellow in colour and appears almost triangular in shape when viewed from front. The dorsal side of the head is convex, its base is somewhat concave so as to fit on the thorax. As in most adult insects the segments comprising the head cannot be distinguished, but the following regions of the head can be made out, beginning from the base and proceeding towards the anterior.

The base of the head, known as the occiput (*oc.*), is concave and curves downwards at the sides to meet the post-genæ from which it is not separated by any suture. The occiput



Text-Fig. 1A. Anterior view of head of a male specimen. $\times 9$.

an = antenna; *cl* = clypeus; *e* = eye; *fr* = front; *gn* = genæ; *mn* = mandible; *o* = ocelli; *vr* = vertex.

is black throughout. The next region is the vertex (*vr.*) which forms the dorsal side of the head capsule and which bears the ocelli (*o.*). It is short and convex.

The vertex is followed by the front (*fr.*) which constitute the upper one-third of the face. It is very large and deep yellow. It is almost trapezoid in shape. It bears the antennæ and is bounded laterally by the large compound eyes (*e.*).

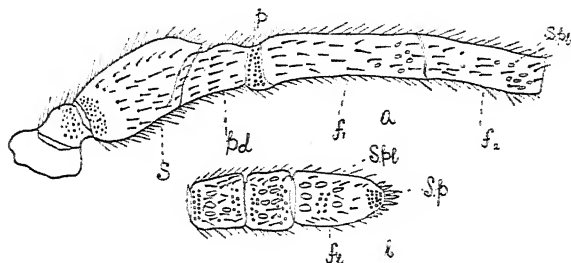
The next region is the clypeus (*cl.*) which is almost triangular in shape. It is a distinct sclerite, being separated from the neighbouring parts by well-defined sutures.

The sides of the head, the genæ (*gn.*), are large, extending from the clypeus and labrum to the lateral margins of the head. Posteriorly they are continued as the post-genæ, there being no line of demarcation between the two. The terms, genæ

and post-genæ, are applied to the different regions, anterior and posterior, of the same sclerite.

The compound eyes (fig. 1, *e.*) are very large, occupying the lateral sides of the head. They are not round as is the case in most insects but are crescentic in shape. Their colour is flavous, with the margins black. The three ocelli (*o.*) are black and are very conspicuous; they are arranged in the form of a triangle on the dorsal region or the vertex.

The antennæ (fig. 2.) are very important organs as they afford reliable characters of classificatory importance. They originate from the upper side of the head, a little below the median ocellus and are a little shorter than the length of the body. They are many jointed, there being 37 joints in the male and 48 in the female. They are very thin, with the apical joints slightly enlarged. An antenna when observed under a



Text-Fig. 2. Antenna of a male. $\times 18$.

(*a*) basal portion; (*b*) apical portion. f_1 =first flagellum; f_2 =second flagellum; f_3 =last flagellum; *p*=pit at the base of the first flagellar joint showing the presence of Johnston's organ; *pd*=pedicle; *s*=scape; *s.pl*=sense-plates; *s.p*=sense-pegs.

microscope is found to be covered on almost all sides with numerous fine hairs. The hairs are unbranched and can be divided into two categories, namely, short and long varieties. The antenna is fuscous except on the under surface of the first joint which is brownish. The first antennal joint is called the scape (*s.*), the second the pedicle (*pd.*), and the following joints are known as the flagellar joints or clavola (Comstock). Some authorities call the joint next the pedicle as the annellus. The scape is the thickest of all the joints. At its base there are two smaller segments, the proximal one of which is almost cylindrical. The joints that follow the pedicle gradually decrease in size. The scape possesses only the longer variety of hairs, whereas the other joints have both the long and short varieties, the long kind being confined to the sides. At the base of the first flagellar joint is seen the "organ of Johnston", which is indicated externally by a circle of pits (*p.*). From the

first flagellar joint onwards, the antenna is covered, in addition to the ordinary hairs, with sense-plates (*s.pl.*), recurved and sensory hairs. The sense-pegs (*s.p.*) are restricted to the apical segment (fig. 2, b).

The sense-plates and sense-pegs are nothing but modified hairs. The sense-plates though so different in shape are exactly similar in their internal structure to the ordinary hairs. These sense-plates are absent on the scape and pedicle but are present on all the flagellar joints.

The sense-pegs are thick and blunt and as already stated are confined to the extremity of the apical joint. These lack the terminal cap described by Vogel (1923), in the corresponding organs of wasps. The number of sense-pegs varies in different genera in the Ichneumonidæ. In *Xanthopimpla* there are ten sense-pegs arranged in a curved row at the tip of the antenna in both sexes. In the genus *Pseudeugalta* the number is reduced to eight.

Snodgrass (1925) also found similar structures on the antennæ of the bee, although their positions and number vary from those present on the antennæ in the Ichneumonidæ. In the bee, according to Snodgrass sense-plates are found after the third flagellar joint and sense-pegs are met with after the fourth flagellar joint, and more abundantly on the end of the eleventh joint. Snodgrass does not mention the actual number of the sense-pegs present on the individual joints.

The sense-plates and sense-pegs are both sensory organs as shown by Mc Indoo (1916) and Snodgrass (*op. cit.*) in the case of bees.

The ordinary hairs are also differently distributed in bees and wasps, in which the large variety is restricted to the scape only and the small variety to all other joints.

Excepting bees and wasps, practically no detailed work on the structures of the antenna has been carried out in any group of the Hymenoptera. Probably a careful examination will reveal the existence of similar structures in other forms as well as in *X. pedator*, *X. punctata* and certain other members of the family Ichneumonidæ, e.g., *Pseudeugalta*, in all of which I have been able to detect them.

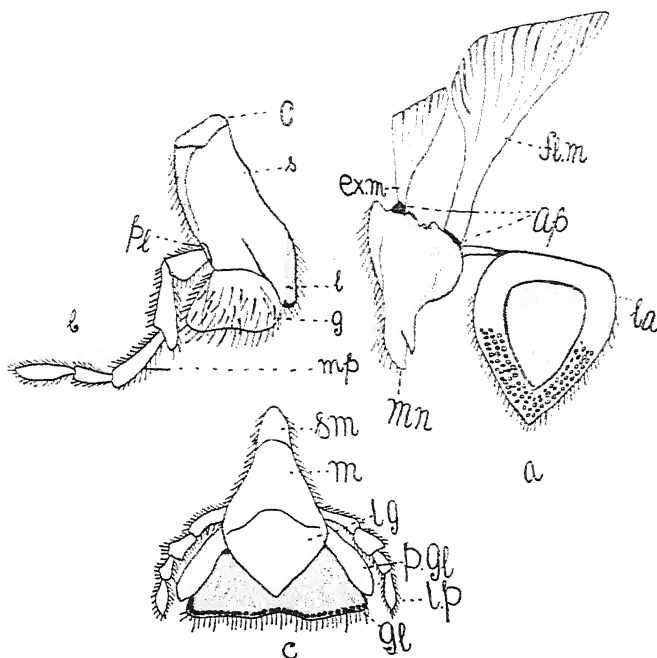
The Mouth-Parts. (fig. 3, a, b, c.).

The mouth-parts differ greatly in different groups of insects according to their modes of life. In the Ichneumonids the mouth-parts are adapted for both chewing and sucking. The various parts are quite distinct and prominent and consist of an upper lip, the labrum (*la.*), an under lip, the labium, and two pairs of jaws acting horizontally between them, a superior pair, the maxillæ, and an inferior pair, the mandibles (*mn.*). The maxillæ and the labium are furnished with a pair of feelers called the maxillary palpi and labial palpi respectively.

The labrum (fig. 3a, *la.*) or the upper lip, lies anterior to

the clypeal region. It is a broad, free, flat, and triangular flap lying above the opening of the mouth. It is freely movable. It is not long enough to cover the mouth-parts. It forms the roof of the anterior most part of the mouth and has a central, raised, triangular area. On the apical side of it some granules are seen.

The mandibles (fig. 3*a*, *mn*.) or the jaws, are strong organs, closing behind the labrum and hinged to the lateral parts of the



Text-Fig. 3, Mouth-parts. $\times 23$.

a, labrum and mandible; *b*, maxilla; *c*, labium.

ap = apodemes; *c* = cardo; *ex. m* = extensor muscle; *fl. m* = flexor muscle; *g* = galea; *gl* = glossae; *l* = lacinia; *la* = labrum; *lg* = ligula; *l. p* = labial palpus; *m* = mentum; *mn* = mandible; *mp* = maxillary palpus; *p. gl* = paraglossae; *pl* = palpifer; *s* = stipes; *sm* = submentum.

head, below the genæ. In the Ichneumonids and in most other insects these consist of only one segment although in certain members of the family Scarabæidæ (Coleoptera) they consist of several distinct sclerites.

The mandibles are highly chitinated and triangular in shape. They are broad and thick in the proximal region and narrow abruptly in the distal region. Their apices are

bidentate; both teeth are black, hard, and pointed, the outer one being slightly longer than the inner one. The mandibles are firmly attached to the head capsule by two muscles and are thus able to move in a transverse axis. On the two extremes of the base of the mandibles are seen two knobs by which the mandibles are suspended from the genæ. The two muscles, referred to above, are known as the "extensor muscle" (*ex.m.*) and the "flexor muscle" (*fl.m.*); the former pulls the outer edge of the base, thereby opening it, and the other one pulls on the inner edge, thereby closing it. The flexor muscle is stronger since most of the hard work of the mandible falls on it. Both muscles consist of flat, fan-shaped bunches of fibres, diverging from the chitinous stalks, the apodemes (*ap.*), at their bases. The distal ends of the fibres are attached to the walls of the head. The mandibles are sparsely covered with minute hairs which are visible only under a powerful lens. Each mandible is connected with the labrum by a thin chitinous rod near the base as shown in the diagram.

The first maxillæ (fig. 3b.) are the second or superior pair of the jaws. They hang on the sides of the mandibles. Each maxilla is primarily divided into five distinct sclerites, namely, the cardo (*c.*), the stipes (*s.*), the palpifer (*pl.*), the galea (*g.*) and the lacinia (*l.*). The cardo is the basal piece, and is small and triangular; it is upon this sclerite that all motions of the maxilla is dependent. The stipes is the largest of all. It is oblong in shape and bears at its apical end the galea and the lacinia and on the outer corner of its distal end is inserted the palpus. The area at the base of the palpus is known as the palpifer, which, unlike that in many insects, is not distinctly marked off in the species under discussion. The galea slightly overlaps the lacinia; it is large, flat, and semicircular in shape and is fringed with smaller hairs. The lacinia is small and narrow and is borne on the inner margin of the stipes. Its margin also is fringed with small hairs.

Morley (1913) stated that the maxillæ are only three jointed in the larva. He did not mention the names of these three joints nor the number of joints found in the adults.

The maxillary palpus (*mp.*) is five jointed and is covered with fine hairs. The different joints are not of the same size and shape; the basal piece is stout and strong, the second and third sub-equal, wider distally than at the proximal end, the fourth little more than half the length of the second and the fifth slightly longer than the fourth and rounded distally.

The labium.

In the embryo the second maxillæ fuse with each other so as to form a single organ called labium (fig. 3c). Like the maxillæ, the labium consists of several parts which are, however, smaller than the corresponding parts of the maxillæ and several

parts of the labium cannot be homologised with any degree of precision with components of the maxillæ. The basal sclerite of the labium, known as the submentum (*sm.*) is homologous to the cardines of the first maxillæ. The submentum is very small and narrow and is bounded laterally by the stipes of the first maxillæ. The next one is the mentum (*m.*), which corresponds to the stipes of the first maxillæ. The mentum is wide, broad, and sub-triangular in shape, having the apical portion much wider. In the infero-lateral region near the lateral angles it bears two palpi, one on each side. The mentum is followed by a triangular sclerite, the ligula (*lg.*), which at its distal end bears a pair of lobes, namely, the glossæ (*gl.*) and the paraglossæ (*p.gl.*).

The two glossæ are fused into a median lobe as is met with in saw-fly, bee and many insects that feed on liquids. But the shape found in *X. pedator* differs much from those found in bee and others. In *X. pedator* the united glossæ is flat and broad, as opposed to the pointed form in the bee and saw-fly. It is fringed with very short hairs at the terminal margin.

The paraglossæ (*p.gl.*) are present on the lateral sides of the ligula. Each is elongated and lies closely by the sides of the median glossa. No hairs are present on it.

In accordance with the feeding habits of the Ichneumonids, the maxillæ and the labium are closely associated with each other, and the fusion of the two glossæ to form a single median organ may be ascribed to the habits of licking liquid food.

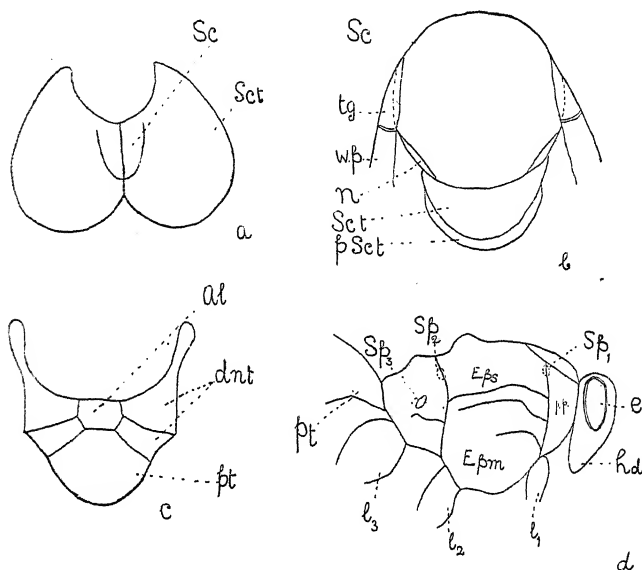
The labial palpi (*l.p.*) are much smaller than the maxillary palpi and are only four jointed. Each labial palpus is fringed with very small hairs on the sides, and presumably, as in other insects, performs the function of a sensory organ.

(b) The thorax and its appendages.

The thorax is the middle region of the body. This region bears the organs of locomotion such as the wings and legs. It is divided principally into three parts, namely the pro-, the meso-, and the meta-thorax, which are firmly attached to one another. Each thoracic segment bears a pair of legs but the wings are developed only on the second and third segments. Besides these three segments, the first abdominal segment is incorporated in the thorax in all higher Hymenoptera. Therefore, strictly speaking, the thoracic region consists of four parts—the three thoracic segments and the first abdominal segment. This transfer of the first segment of the abdomen to the thorax takes place during the pupal stage as has been shown by Zander (1910) in the case of bees and by Emery and Janet in ants as quoted by Packard (1898). This transferred segment is known as the median segment or propodeum.

A typical thoracic segment consists of a dorsal part known as the tergum or notum, a ventral part, the sternum, and the lateral parts, the pleura. The tergum, especially in the

meso- and meta-thoracic segments, are usually differentiated into two pieces and sometimes into four. These are termed, beginning from the anterior to the posterior, pre-scutum, scutum, scutellum, and post-scutellum. The scutum and scutellum are invariably large and well-defined, but the pre-scutum and post-scutellum are usually very small and not clearly discernible. The pleuron is also differentiated by means of a suture, the pleural suture, into two parts, the anterior of which



Text-Fig. 4. Thoracic region.

a, b, c, $\times 18$; d, $\times 4$.

a, pro-notum; b, meso-notum; c, meta-notum; d, anterior portion of the insect from the lateral aspect.

al=areolar area; dnt=dentiparal area; e=eye; epm=epimeron; eps=epi-sternum; hd=head; l_1, l_2, l_3 =first, second and third legs; n=notauli; p.p.=propleuron; pt=petiole; p. sc=pre-scutum; p. sc=post-scutum; sp_1, sp_2, sp_3 =first, second and third spiracles; tg=tegula; wp.=wing-process.

is called the episternum and the posterior one, the epimeron. The sternum also is differentiated into an anterior part, the pre-sternum, and a posterior part, the post-sternum.

In *X. pedator* the thorax is stout and yellowish in colour and has characteristic black dots on the dorsal surface. There are four such dots on the meso-notum, three being arranged in a semicircular way on the pre-scutum, the fourth one lying posterior to these, just in front of the scutellum. There is also

a black spot on each of the lateral margins of the meta-notum, or the 'external area'. All these characters are important distinctive characters of the species.

THE PRO-THORAX

The pro-thorax is short and extends almost to the bases of the fore-wings and bears the first pair of legs. Its dorsal surface is covered with very fine hairs. The pro-notum (fig. 4a) is narrow at the base and gradually widens in the posterior region. The anterior margin is very concave and the base of the head rests in this concavity. The posterior margin is convex but is deeply notched in the middle. The pronotum is on the whole differentiated into two parts only, the scutum (*sc.*) and the scutellum (*sc.*), of which the scutellum is much the larger. The pro-pleuron (fig. 4d, *p.p.*) is oblong and very small. The pleural suture is not visible and therefore, the two parts of the pleuron are not distinguishable, as is the case in some other Hymenoptera, such as the bee and the wasp, etc. The prosternum is a triangular plate with its lateral margins partially covered by the lower margins of the pro-pleurae. It is not differentiated into anterior and posterior parts, as is met with in most other Hymenopterous insects.

THE MESO-THORAX

The meso-thorax is the largest of the thoracic segments. It is closely punctate and sparsely covered with fine hairs. It bears the second pair of the legs and the front pair of wings.

The meso-notum (fig. 4b) is a large and highly-convex area. It is differentiated by two distinct transverse sutures into three parts, the scutum (*sc.*), the scutellum (*sc.*), and the post-scutellum (*p.sc.*); the first of these is by far the largest. In the postero-lateral regions of the scutum, there is a pair of indistinct ridges which are known as the notauli (*n.*). On the lateral margins of the scutum, just at the bases of the wings, there are certain sclerites which are known as the tegulae (Kirby). These sclerites, as is well known, are found in the Lepidopterous and in some Hymenopterous insects only. The meso-scutellum is the highest region of the thorax. It is much shorter than the meso-scutum. The post-scutellum is very narrow and is not deeply buried under the scutellum as found in the bee (Snodgrass, *op. cit.*).

The meso-pleuron (fig. 4d) is much larger than the pro-pleuron. The pleural suture is distinct and is almost horizontal; the epimeron is larger than the episternum. Unlike that in the bee, the episternum is not subdivided into two parts, nor the pleural suture is twisted, but the epimeron is differentiated

into three parts by two fine transverse sutures, the lower one being very small.

The meso-sternum is oblong and slightly wider in the distal region. It is incompletely divided into three parts by two short but distinct lines. "Sternauli", or a pair of ridges in the junction of the sternum and the pleuræ, fully developed in other genera, are totally absent in *X. pedator*.

THE META-THORAX (Fig. 4c)

It is slightly shorter than the meso-thorax. It should be noted in this connection that there is no sharp line of demarcation between the meta-thorax and the fourth segment of the thorax, namely, the propodeum, as is found in some other Hymenopterous insects. Previous authorities on the Ichneumonidæ have used the term 'meta-thorax' to denote both the true meta-thorax and the fused first abdominal segment and this nomenclature is also retained here. In fact, it is very difficult to say where the meta-thorax ends and the propodeum begins. The fusion of this first segment of the abdomen with the thorax is not complete in the saw-flies. The meta-thorax bears the third pair of legs and the hind-pair of wings.

The meta-notum is broader in the proximal region, it has two oblique ridges whose course is constant in a species. It is strongly carinate, the carinæ dividing it into several regions or areas. These are known, beginning from the proximal end, as the 'basal area' (which is wanting here), the areolar area (*al.*) and the posterior area (*pt.*). The areolar area is the central area and is quadrate in appearance. The two areas on the sides of the areola are known as the dentiparal area (*dnt.*). The posterior area is small and not differentiated into further regions as is the case in some other Ichneumonidæ.

In striking contrast to these divisions of the meta-notum in the Ichneumonidæ, we find that in bees, wasps, and ants the meta-notum is entirely undifferentiated.

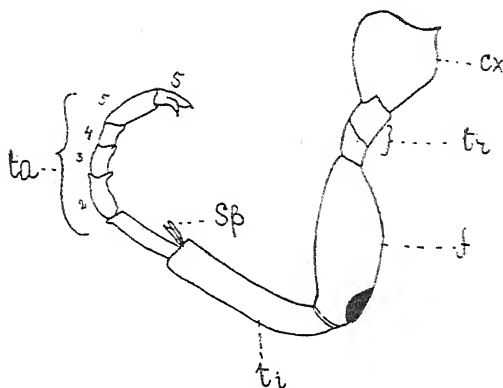
As is found in the bee, the pleural suture here also is entirely wanting. But strictly speaking it is very hard to say which region should be named the pleuron, as the true meta-thorax is very small and the propodeum is fused with it; and since this latter is an abdominal segment, it has only two parts—dorsal and ventral. Therefore, the part that may be termed as the pleural region of the meta-thorax is really a part of the propodeum.

The meta-sternum is a very small plate and is void of any characteristic features.

There are three pairs of spiracles found on the thorax. Their exact position varies in different insects due to the result of adaptation to different modes of life. In beetles, which live in dusty places, the spiracles are concealed and occupy a

ventral position in the thorax, and on the abdomen these are placed near the dorsal edge under the elytra. In the dragonflies the first pair is more dorsally placed than the second and third pairs, the other pairs lie concealed in the membranous fold near the external plate. In Rhynchota these are more or less ventrally placed. In Hymenoptera these are also hidden but generally have dorso-lateral positions.

In *X. pedator* the first pair of the spiracles are situated on the proximal region of the episternum, almost at its junction with the pro-pleuron (fig. 4*d*, *sp.1*). The second pair (*sp.2*) are in the upper region of the membranous fold between the second meso-pleuron and meta-pleuron. The third pair (*sp.3*) are the largest of the thoracic spiracles. These are placed on the dorso-



Text-Fig. 5. Third leg. $\times 4$.

cx = coxa; *f* = femur; *sp* = spines; *ta* = tarsi; *ti* = tibiae;
tr = trochanter.

lateral margins of the meta-thorax. It is really the propodeum that bears this pair of spiracles and these are, therefore, the true first pair of abdominal spiracles.

THE LEGS

The three pairs of legs are almost uniform in structure and shape. They are slender and long, and the surface is sparsely covered with minute hairs. When the thoracic segments are separated out, each is found to bear a groove, at the postero-ventral corner in the pleuron, in which the base of the leg rests. This groove, however, is not visible when the insect is seen as a whole.

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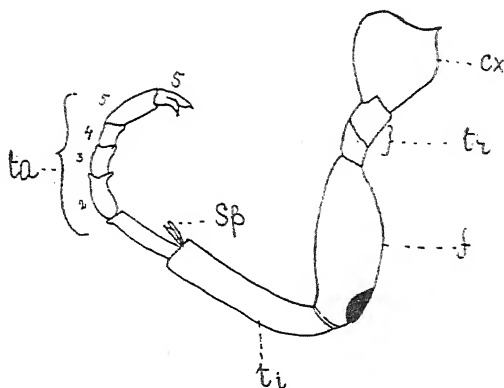
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the same region of the femur but much larger; the base of the tibiae, the tarsi, and the tarsal claws are all black.

The third pair of legs (fig. 5) are stoutest and largest. The coxa (*cx.*) can be easily distinguished as separate from the thorax, although this is not the case in bees, beetles, and many other insects, where it is more or less flattened in a vertical plane and is immovably attached to the sternum and is therefore apt to be mistaken for a part of the thorax. On the other hand in some insects the coxa is articulated by a ventral sclerite, 'the trochantin', which lies in front of it and hinges loosely on the lower edge of the episternum, but a trochantin is never found in the Hymenopterous insects and is supposed to be fused with the sternum.

The trochanter (*tr.*) is quadrangular in shape and is divided into two equal parts by a suture. The femur (*f.*) is the largest and stoutest of all the parts in the leg. The femur of the third leg is especially very much swollen.

The tibiae (*ti.*) is a little thinner and longer than the femur with the distal end slightly thickened but there is no 'strigilis' or antenna cleaner, an organ which is very well developed in ants and bees. It has two spines (*sp.*) at its distal end, near the base of the first joint of the tarsus.

The tarsus (*ta.*) is five jointed, having the two claws at the apical joint curved but not lobate or pectinate as are usually found in other species of the Ichneumonidæ. Each tarsal joint is quite distinct, the first joint being the largest of all.

THE WINGS

The wings (fig. 6, *a*, *b*) are hyaline and triangular in shape. They are uniformly pale yellowish. The fore-wings (fig. 6*a*) are longer than the hind ones and both are held close together by the hamuli, present on the hind wings described above.

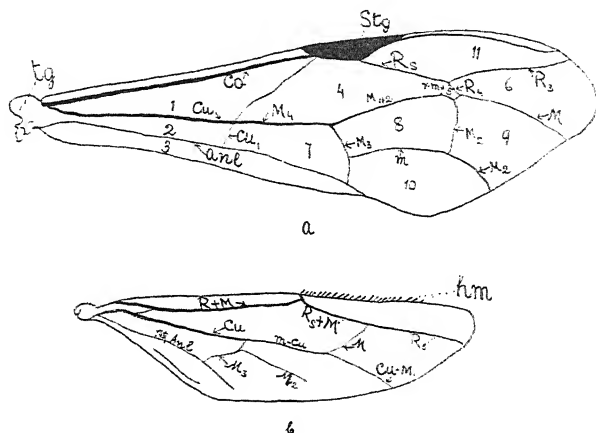
The margins of the wings are known by different names, the anterior margin is called the costal, the distal one, the apical, the posterior one, the anal, and the proximal portion is known as the base of the wing. The base of the wing is generally known as the 'radix'. The sclerites present on the meso-thorax covering the base of the fore-wings are denoted by the term 'tegulae' (*tg.*). In the middle of the costal margin of the fore-wing there is a corneous mass known as the stigma (*stg.*). It is a strong muscle which assists in folding the wing.

The radices are flavous, the tegulae are black in the proximal portion and flavous distally. The stigma is triangular and broad and is of dark-brown colour.

The typical insect wing, as is well known, has several long veins which are termed as (beginning from the costal margin and ending at the anal margin), Costa, Subcosta, Radial, Median,

Cubital, and Anal (Comstock). The areas bounded by the wing-veins are known as 'cells'.

Different authorities do not agree in the application of this system of naming to the veins in Hymenopterous insects. Many have adopted different nomenclatures in which the veins are designated by individual names regardless of homologies with the veins in other orders. In the description of the wing-venations in the Ichneumonidae we find that the descriptions and nomenclatures given by Morley (1913) do not agree to that given by



Text-Fig. 6. Wings, $\times 3$.

a, the fore-wing; b, the hind-wing;

anl=anal vein; co=costa, sub-costa, median and radial veins all coalesced together; cu=cubital vein; hm=hamuli; $M_{1,2,3,4}$ =branches of the median vein, first, second etc.; $R_{1,2,3,4}$ =branches of the radial veins, first, second, etc.; Rs =radial sector; $Rs+M$ =radial sector and median vein coalesced together; $R+M$ =radius and median veins united; stg=stigma; tg=tegula.

Cells of the wings:— 1, 2, 3, basal; 4, 5, 6, cubital; 7, 8, 9, discoidal; 10, anal, 11, radial.

Comstock (1918.) I have here followed Comstock and also have given the corresponding names used by Morley.

The veins or nervures on the fore-wings are distinct and the cells are complete.

Near to the costal margin and running parallel to it is a prominent vein (fig. 6a, co.) which consists of the veins Costa, Subcosta, Radius, and Median, all fused into a single one. It passes through the basal portion of the stigma and meets the apical margin. From the middle of the stigma, the radial sector vein (Rs) is noticeable and gives two branches R_3 and R_4 , the latter one being very small. The second prominent vein

emerging from the radix and running through the middle of the wing is the Cubital vein (*cu.*). It generally coalesces with the anal vein (*vide infra*). A branch of the Median vein passes through the cubital running between the stigma at the proximal end, and, the anal vein at the distal region. The median vein, as is usual, has four branches, of which the first one (M) meets the vein R_4 proximally and reaches the apical margin distally. The second one (M_2) at first running backward, i.e., towards the posterior side of the wing, also meets the apical margin.

It is to be noted in this connection that the first portion of M_2 (that is, the portion which runs to the anterior side) is named by Morley (1909) as the 2nd recurrent vein. This name, "recurrent vein", is also used by most authorities on the Ichneumonidae. This vein is a special characteristic found on the wings of the Ichneumonidae only, and not present in the allied family Braconidae which have much resemblance with the former family.

The vein $M_{(1+2)}$ is a short one, lying just the opposite of M_1 . There is another vein known as the radio-median (*r-m.*) joining the radial sector on the dorsal region and meeting the $M_{(1+2)}$ ventrally. The area bounded by the veins (*r-m.*), R_4 , M_2 and $M_{(1+2)}$ is known as the 'areolet'. This area is almost like a parallelogram and not triangular, as stated by Morley, (1913).

The vein M_3 runs towards the anal margin meeting the anal vein almost at the anal margin. This vein is denoted by Morley as the first recurrent vein. The vein M_4 lies between the Cubital and the vein M_3 . The vein cu_1 is a very small one running between the cubital (*cu.*) and the anal vein (*anl.*). A small vein running parallel to the costal margin lies between M_3 and M_2 and is denoted by the name M . The anal vein (*anl.*) runs from the radix and meets the anal margin. It is quite prominent and long.

The cells have also been given different names according to the veins that bound them. For instance, the cell near the costal vein is called the costal (c_1), that near the cubital vein, the cubital cell (c_2), that adjoining the anal vein is denoted by the anal cell (c_3), and so forth.

In the hind-wing, the venation is much reduced. The costa is, however, noticed as a separate vein for a short distance, then it coalesces with the compound vein or 'serial vein' (Comstock) $R+M$ and meets the costal margin near the hamuli. The vein R_5+M runs obliquely downwards from the costal margin and separates out after a short distance as the R_5 and M . This vein M is called by Morley as the second recurrent vein. The Cubital (*cu.*) passing from the radix, meets a branch of the Median and reaches the apical margin as the $Cu-M_1$. A short vein is seen, near the radix, joining the Cubital with the

R + M: this occurrence appears to be unique, as it has not been previously reported by any worker on the Ichneumonidae. It seems to me that the Median vein was at the very beginning connected with the Cubital vein and then passing up joined the compound vein of Costa and Radius, and this short branch is nothing but a remnant of the Median vein. The first anal (*Anl.*) vein does not reach the apical margin but ends a short distance from it. In its distal portion it receives a branch of the median vein (M_3) which meets the cubital on the costal side. This vein was named by Morley as the first recurrent vein. And this vein also meets another vein M_2 , running almost parallel to the costal margin. Another small vein is also noticed under the 1st anal vein, this may be the 2nd anal vein.

The wing-cells on the hind-wing are not complete as those on the fore-wing. These are denoted by the same terminology as the previous ones.

THE ABDOMEN

The abdomen is the last or posterior part of the body and is connected with the thorax by a distinctly constricted stem, the petiole. It is broader at the base and gradually tapers in the distal region. Its colour is yellow. The abdomen in adult insects usually consists of ten segments, though all these segments are not always visible, a few being retracted at the posterior end. The abdominal segments have only dorsal or tergal plates and ventral or sternal plates. Each abdominal segment is connected with the preceding and following segment by a large and flexible intersegmental membrane, which allows the segments great freedom of motion. Each tergal plate overlaps the following one, while the sternal plates are underlapped by the succeeding ones. The terminal segment carries the anus, whereas the openings of the male and female reproductive organs are on the ventral surfaces of the ninth and eighth segments respectively.

In *X. pedator*, the male has eight visible tergites and sternites but the female has only eight tergites and six sternites.

The abdominal spiracles are situated on the lateral sides of the first eight tergal plates, counting the propodeum as the first segment of the abdomen. These are all minute, being much smaller than those on the thoracic region. The external openings are narrow slits, indistinctly visible in dry specimens.

At the terminal end of the abdominal segment in both sexes, is found a pair of appendages, the styli (fig. 7, *stl.*). They are small and are fringed with minute hairs. These are not at all segmented and have never been reported by previous workers on the Ichneumonidae. In a few species of the allied genus *Pseudeugalia*, that I have had the opportunity to examine, these appendages were not found.

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emerging from the radix and running through the middle of the wing is the Cubital vein (*cu.*). It generally coalesces with the anal vein (*vide infra*). A branch of the Median vein passes through the cubital running between the stigma at the proximal end, and, the anal vein at the distal region. The median vein, as is usual, has four branches, of which the first one (*M*) meets the vein R_4 proximally and reaches the apical margin distally. The second one (M_2) at first running backward, i.e., towards the posterior side of the wing, also meets the apical margin.

It is to be noted in this connection that the first portion of M_2 (that is, the portion which runs to the anterior side) is named by Morley (1909) as the 2nd recurrent vein. This name, "recurrent vein", is also used by most authorities on the Ichneumonidae. This vein is a special characteristic found on the wings of the Ichneumonidae only, and not present in the allied family Braconidae which have much resemblance with the former family.

The vein $M_{(1+2)}$ is a short one, lying just the opposite of M_1 . There is another vein known as the radio-median (*r-m.*) joining the radial sector on the dorsal region and meeting the $M_{(1+2)}$ ventrally. The area bounded by the veins (*r-m.*), R_4 , M_2 and $M_{(1+2)}$ is known as the 'areolet'. This area is almost like a parallelogram and not triangular, as stated by Morley, (1913).

The vein M_3 runs towards the anal margin meeting the anal vein almost at the anal margin. This vein is denoted by Morley as the first recurrent vein. The vein M_4 lies between the Cubital and the vein M_3 . The vein *cu*₁ is a very small one running between the cubital (*cu.*) and the anal vein (*anl.*). A small vein running parallel to the costal margin lies between M_3 and M_2 and is denoted by the name *M*. The anal vein (*anl.*) runs from the radix and meets the anal margin. It is quite prominent and long.

The cells have also been given different names according to the veins that bound them. For instance, the cell near the costal vein is called the costal (*c*₁), that near the cubital vein, the cubital cell (*c*₂), that adjoining the anal vein is denoted by the anal cell (*c*₃), and so forth.

In the hind-wing, the venation is much reduced. The costa is, however, noticed as a separate vein for a short distance, then it coalesces with the compound vein or 'serial vein' (Comstock) $R + M$ and meets the costal margin near the hamuli. The vein $R_3 + M$ runs obliquely downwards from the costal margin and separates out after a short distance as the R_3 and *M*. This vein *M* is called by Morley as the second recurrent vein. The Cubital (*cu.*) passing from the radix, meets a branch of the Median and reaches the apical margin as the $Cu-M_1$. A short vein is seen, near the radix, joining the Cubital with the

R + M: this occurrence appears to be unique, as it has not been previously reported by any worker on the Ichneumonidae. It seems to me that the Median vein was at the very beginning connected with the Cubital vein and then passing up joined the compound vein of Costa and Radius, and this short branch is nothing but a remnant of the Median vein. The first anal (*Anl.*) vein does not reach the apical margin but ends a short distance from it. In its distal portion it receives a branch of the median vein (M_3) which meets the cubital on the costal side. This vein was named by Morley as the first recurrent vein. And this vein also meets another vein M_2 , running almost parallel to the costal margin. Another small vein is also noticed under the 1st anal vein, this may be the 2nd anal vein.

The wing-cells on the hind-wing are not complete as those on the fore-wing. These are denoted by the same terminology as the previous ones.

THE ABDOMEN

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THE GENITALIA

The external appendages found near the genital openings in both sexes are known as the genitalia. The opinion as to their homologies is not yet unanimous. Unless the internal relations and the structures of the appendages are carefully investigated, one is apt to be led to false deductions. Hence, we find much difference of opinion among the workers on the genitalia in insects (*vide* Newell, 1918).

These appendages naturally differ in the two sexes and often their structure in one species is quite different from that in the allied species or genera and hence they are very commonly used in systematic work.

(a) Male (fig. 7).

The male genitalia consist of three pairs of appendages all borne by the ninth segment. It must, however, be remembered that three pairs of genital appendages are not usually met with in all insects, often there are only two pairs (Pruthi, 1924).

The three pairs of appendages in *X. pedator* lie one within the other, so at the most only two pairs are visible externally. Beginning from the outermost these are termed in all Hymenopterous insects as stipes (*st.*), sagitta (*sg.*), and spatha (*sp.*) respectively (Kluge, 1895), or 'Valve externa', 'Valve interna', and 'Penis' respectively (Zander, 1900). Works of Dewitz (1874-5), Verhoeff (1893), Kluge (1895), Zander (1900), and others, who have studied the development of these organs, show that in the young condition there are only two pairs of appendages, an outer and an inner pair; the former pair give rise to the stipes and the latter pair in some insect, *e.g.*, Apidæ, directly develop into the spatha or penis; while in the Vespidæ, Saw-flies, etc., it becomes two pairs during development and gives rise to both the sagitta and the penis of the adult. From these evidences the conclusion is drawn (Schmiedeknecht, 1882-4) that the penis in the former case is equivalent to both the sagitta and penis in the latter case.

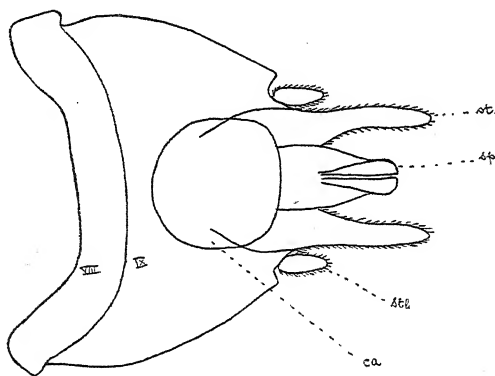
In view of the nature of the development of these organs, Pruthi (1924) compared them with the 'subgenital-plates', 'parameres', and 'aedeagus' of Homoptera and other insects.

The outermost pair, or the stipes, are the largest of the appendages and are covered all over with minute hairs. Each stipes is a triangular plate, broader at the base and tapering in the distal region. The second pair, or the sagitta, are the smallest appendages and are hidden under the stipes. Each sagitta is almost oval in shape and is devoid of hairs, etc. The innermost pair, the penis or spatha (*sp.*), is moderately long. The components of this pair are almost fused with each other and form a tubular organ, carrying the gonopore at the apex. This is the proper copulatory organ.

There is a ring-like sclerite between the bases of the genitalia and the ninth sternum. This structure is called the cardo (*ca*). It is nothing but a part of the ninth sternum (André, 1881-96). Verhoeff, (1893), however, homologised it with the basal plate of Coleoptera. As pointed out by Pruthi, the basal plate of the Coleoptera is at an entirely different place than that occupied by the cardo in Hymenoptera. It appears, therefore, that André (*op. cit.*) was correct in considering this sclerite as a part of the ninth sternum.

(b) Female (fig. 7).

The Ichneumonidae lay their eggs on the surface or inside the body cavity of caterpillars which they paralyse by stinging. Owing to this habit the ovipositor is sharp, strong, and long. The ovipositor always remains protruded beyond the posterior



Text Fig. 7. Male genitalia, X 18.

ca = cardo; *ps* = spatha; *st* = stipes; *stil* = styli;
VIII, IX = eighth and ninth abdominal segments.

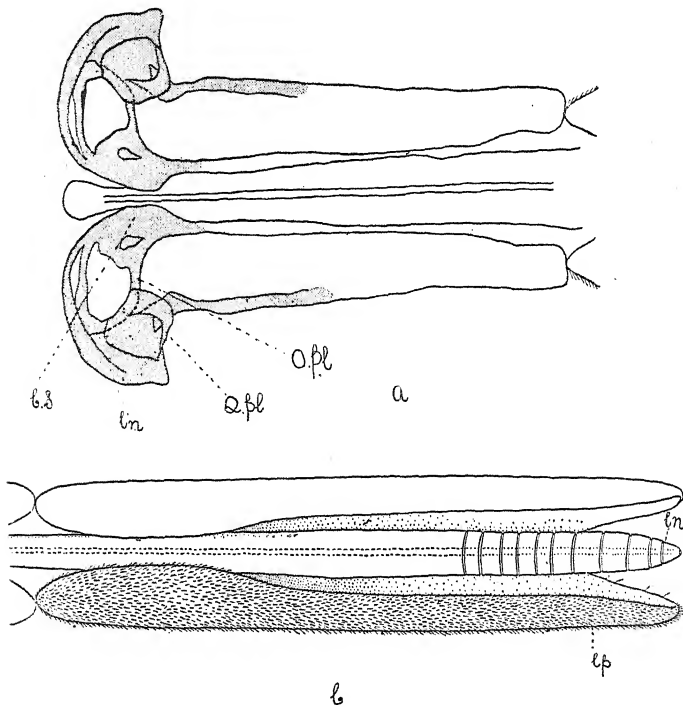
extremity of the abdomen. In the bee and the wasp, as is well known, the ovipositor, or the sting, is situated in a specially modified place known as the sting-chamber from which it can be thrust-out at will, when occasion demands.

The ovipositor in *X. pedator* is about one-third the length of the abdomen.

The components of the ovipositor can be clearly distinguished; they are not so much complicated as those of the male genitalia. Here also they consist of three pairs of appendages, the anterior, posterior, and lateral ovipositor lobes; or, the ventral, inner, and dorsal valvulae respectively (Walker, 1919; 1922). These three pairs are generally known as the lancet (*ln.*), sheath and the lancet-palpi (*lp.*) respectively (Zander, Snodgrass, etc.). These appendages lie close to each other.

The first or the anterior lobes, are borne by the eighth sternum near its posterior margin; the other two pairs, namely, the posterior and the lateral lobes are borne by the ninth sternum.

In some insects, the three pairs of appendages comprising the ovipositor remain distinct and separate from one another, as



Text Fig. 8, Female genitalia, X 9.

a, inner portion; *b*, outer portion;

b.s.=bulb of the sheath; *ln*=lancet; *lp*=lancet palpus;

o. pl=oblong plate; *q. pl*=quadrate plate.

is the case, for example, in the common grasshopper. The homologies of the appendages of the Ichneumonidae and the Grasshopper may be stated thus: the lancets or the anterior lobes are homologous to the ventral valvulae, since both are the appendages of the eighth segment; the sheath or the posterior lobes is equivalent to the inner valvulae and the palpi or the lateral lobes represent the dorsal valvulae or the outer gonapophyses of the ninth segment.

The lancets (or the anterior ovipositor lobes) are long and sharp. It is with this pair of appendages that the insect

pierces the body of the victim and deposits her eggs therein. Each component of the lancet is attached at its base to the triangular plate by two arms which curve outwards. On the ventral side of the lancet a canal or deep groove runs throughout its length. It is through this canal that the eggs are said to pass out. The lancet is ringed in the distal region and, unlike that in bees and wasps, has no barbs at the apex.

The second pair of the ovipositor lobes, or the sheath, are situated very close to the lancet and cannot be separated or even distinguished from the lancet in the dry specimens. These are the shortest of all the appendages of the female genitalia. The base of the sheath is also prolonged at the sides forming what are known as the arms of the sheath, which are borne by the oblong plate, as stated before. The third pair of the ovipositor lobes, or, the lancet palpi, are long and wide. The lancet-palpus lies on the sides of the lancet. Their extremities which project beyond the abdomen are fringed with minute hairs. The lancet-palpi protect the lancet from external injuries and shocks. These may also act as sensitive organs, as the case in the bee, where they enable her to know when the abdomen is in contact with a suitable prey on which she may use the sting. The lancet-palpi in *X. pedator* are like elongated rods, uniform in appearance throughout the length, thus resembling those in the grasshopper.

At the base of the ovipositor there are three chitinous plates which are believed to keep the ovipositor in an elongated position. These plates are known respectively as the quadrate plates (*q. pl*), oblong plates (*o. pl*), and triangular plates. In *X. pedator* the triangular plates are hidden under the quadrate plates and, therefore, are not visible unless the latter plates are removed. The quadrate plate overlaps the distal half of the oblong plate, and covers the triangular plate. Zander (1911) has shown that the triangular plate is a part of the eighth sternum in the case of the bee, and this is believed to be the case in all Hymenopterous insects. The fact that it is connected with the lancet also supports the view that it is a part of the eighth segment to which the lancet belongs. As the quadrate plate is overlapped by the spiracle-plates of the eighth tergum, it may appear to belong to the eighth sternum, but, Zander, who studied its development in the bee, has showed that it is a part of the ninth tergum. In many adult Hymenoptera too, the quadrate plate is found to be a tergal piece (Snodgrass). It is almost oval in shape, resembling that of the bee. The oblong plate belongs to the ninth sternum. Its shape in *X. pedator* is strikingly different to that found in bees and wasps. Here it is much smaller and rod-like in appearance. It is partly hidden under the quadrate plate where it is bifurcated. It is attached to both the sting palpus and the arm of the sheath.

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New Species of Indian Plants

By E. BLATTER

The plants here described were gathered in the Bombay and Madras Presidencies and Mount Abu. All the descriptions have been prepared from live specimens.

Ranunculaceæ

THALICTRUM OBOVATUM Blatter *sp. nov.* [*Ranunculacea similis Thalictro Dalzellii* Hook. *sed differt caulibus non sulcatis stipulis fimbriatis, sepalis late obovatis unguiculatis quam staminibus paululum brevioribus, filamentis applanatis, ovarii distincte stipitatis, compressis.*]

An erect herb. Roots fibrous. Stem up to 45 cm. high, slightly flattened on one side, not grooved, light-coloured, glabrous. Leaves trifoliolate except the topmost which are 2-foliolate or 1-foliolate, very slightly sheathing at the base; leaflets about 3 cm. diam., glabrous, almost round or kidney-shaped, with a deep acute sinus, margins crenately and irregularly lobed and dentate; nerves and veins prominent above and beneath; petioles of lower leaves 6 cm. long, on the upper side slightly or deeply or not at all grooved in the same plant, sometimes grooved only in the lower part, glabrous; petiolules up to 3 cm. long. Stipules adnate to the petiole and united on back opposite the leaf or only adnate to petiole, up to 1 cm. long, oblong-acute, broad to narrow, fimbriate, membranous, strongly nerved. Flowers 8-9 mm. diam., in small leafy panicles crowded at the ends of the branches, delicately sweet-scented; leaves of panicles ovate-acute or blunt with very small stipules which don't unite opposite the leaves. Sepals usually 4, sometimes 5, white, broadly obovate, clawed, strongly nerved, 4-5 mm. long, 3 mm. broad, slightly shorter than the stamens. Petals 0. Stamens many; filaments flat, tapering towards base, twice as long as anthers; anthers basifixed, club-shaped. Ovary on a stalk 2.5 mm. long, broadly oblong, dark green, compressed, with a long neck almost as long as the ovule-bearing part, neck deeply furrowed on dorsal side, light green, almost transparent, curved outward at tip like a beak (not hooked) with stigmatic surface on ventral surface. Ovule oblong-obovate. Fruit not ripe.

Locality.—Bombay Presidency: Aukali, half-way between Panchgani and Mahableshwar, about 4,100 ft. altitude, on edge

of Yenna valley in very exposed position, apparently very rare (Blatter P26 type).—Flowered 12th July, 1925.

Note.—I have not been able to place this species in any of the 3 sections given by DeCandolle. Resembling *T. Dalzelli* in most characters it should belong to *Euthalictrum* DC., but the compressed achenes exclude it from that section. The leaves, again, remove it from *Physocarpum* DC. Future monographers of *Thalictrum* may have to make a change in the division of the genus.

Capparidaceæ

CLEOME ASPERRIMA Blatter *sp. nov.* [*Capparidaceæ*, *similis Cleome simplicifoliæ* Hook. f. and Thoms., *differt tamen forma sepalorum necnon petalorum, petalis strigosis, pedicellis totis hispida, numero staminum, filamentis apice minime incrassatis.*]

Annual, up to 30 cm. high, erect or slightly ascending. Stem rigid, furrowed, slightly branched, densely covered with short rigid spinulose hairs arising from stout glandular bases on the ridges as well as in the furrows, leafy all along. Lower leaves 3-4 cm. by 1 cm., lanceolate-acuminate, acute at base with midrib above depressed and prominent below, strigose on both surfaces, with longer and stronger spinulose whitish bulbous-based hairs on the midrib, petiole 2-3 mm. long; upper leaves from about the middle of the stem narrowly linear-lanceolate-acuminate, sessile or subsessile, about 3 cm. by 3-5 mm., otherwise like the lower. Flowers purple, solitary in the axils of leafy bracts, forming a long lax raceme for the two upper thirds of the stem. Pedicels filiform, about 2 cm. long, uniformly thick, erect or slightly ascending in flower, horizontal or depressed in fruit, spinulose-hairy the whole length, but more so immediately below the flower. Stamens 8-15; filaments uniformly thick throughout. Sepals 4, narrowly triangular-acuminate, a little more than $\frac{1}{2}$ the length of the petals, densely pilose on back and margin. Petals 4, 5 mm. long, oblanceolate or spatulate, rounded at apex and provided with a prominent mucro, median line of back strigose and sometimes also the margin. Capsule up to 22 mm. long, including the beak 2-3 mm. long, green, subtorulose, about 2-3 mm. diam., straight, striate, slightly flat, glabrous; seeds round-kidney-shaped, greyish, 2 mm. diam., smooth. No gynophore.

Locality.—Dhulia, W. Khandesh of the Bombay Presidency, collected by Mrs. Helene Hedberg. (No. 7670, type).—Flowered and fruited at the beginning of November, 1928.

Note.—If the figure of the seed of *Polanisia buetporensis* Munro (Wight Ic. t. 1072), a synonym of *Cleome simplicifolia*, is correct, we can point out another good difference between *C. simplicifolia* and the new species. In the latter the seed forms a completely closed ring, whilst Wight's figure shows an open ring.

Caryophyllaceæ

SPERGULA ROSEA Blatter *sp. nov.* [*Caryophyllaceæ. Folia opposita, subulata, longe hirsuta versus apicem. Stipulæ setaceæ. Sepala 5, ovato-lanceolata, acuta, paullum inæqualia. Flores in cymis paniculatis pedunculatis. Petala rosea, spathulata vel anguste oblanceolata, obtusa, basi longe unguiculata, sepalis multo longiora. Stamina 5, cum petalis alternantia; filamenta petalis æquilonga. Styli 5, lineares; stigma minutissimum. Capsula 1-locularis. Semina ovoideo-globosa vel pyriformia, formose reticulata secundum lineas horizontales, nigro-cinerascentia.*]

A small herb. Leaves opposite, subulate, stipulate, long-hairy towards tip. Stipules long-setaceous. Sepals 5, ovate-lanceolate, acute, slightly unequal. Flowers in peduncled panicked cymes. Petals 5, pink, long-clawed, spathulate or narrowly oblanceolate, obtuse, longer than the sepals. Stamens 5, alternating with the petals; filaments as long as the petals. Styles 5, linear; stigmas minute. Capsule 1-celled. Seeds ovoid-globose to pyriform, beautifully reticulated in horizontal rows, black, with a greyish hue.

Locality—Bombay Presidency: Igatpuri, in grass-land near lake (Hallberg No. 19799, type, in formalin, St. Xavier's College, Bombay).—Flowered and fruited in October, 1917.

Papilionaceæ

INDIGOFERA MONOSPERMA Blatter *sp. nov.* [*Pertinet ad sectionem Sphæridiophoræ. Herba nana procumbens ramosa. Caulis ramique hirsuti pilis medifixis. Folia pinnatim 3-foliolata exstipellata; foliola integra, obovata, obtusa, hirsuta, facie inferiore glandulis obsita viridibus; foliolium terminale 16×9 mm., lateralia 10×8 mm., rhachis petiolusque hirsuta. Stipulæ minutæ, subulatæ, hirsutæ. Stipellæ 0. Racemi densi, breves, axillares pedicellis brevissimis. Calyx minutus, 5-lobus lobis fere æqualibus subulatis, hirsutissimis. Petala sub-æquilonga; vexillum ovatum, obscure mucronatum, 3.5×2 mm., brevissime unguiculatum, roseum intus, extus flavescens et hirsutum; alæ oblique spathulatæ, obtusæ, integræ vel apice minutim serrulatæ, glabræ, rubræ; petala carinæ parte media connata, recta, virescentia hirsuta excepta parva parte purpurascenti calcaribus vicina; calcaria parva, acuta, alba. Stamina diadelpha antheris uniformibus apiculatis. Ovarium 1-ovulatum, pubescens, stylo filiformi, glabro, stigmatibus capitato. Legumen parvum, ovoideum, acutum, 2.5 mm. longum, indehiscens; semen 1, parvum, aliquomodo compressum, glabrum.*]

A small procumbent herb, about 7 cm. high, branched from creeping part. Stem and branches terete, with numerous appressed medifix hairs, tips of hairs curved upwards; hairs of younger parts longer, fixed along their lower part, pointing

upwards. Leaves pinnately 3-foliolate, exstipellate; leaflets entire, obovate, obtuse, hairy on both surfaces with hairs chiefly more or less basifixed, dotted with green glands beneath, dots turning black when old; terminal leaflet 16 by 9 mm., lateral 10 by 8 mm.; rhachis 2.5 mm. long, hairy; petiole flat above, hairy. Stipules minute, subulate, hairy. Flowers in dense, short, axillary racemes; pedicels very short, up to 1 mm.; peduncle and pedicels hairy. Calyx minute, 5-lobed, lobes about equal, subulate, very hairy, hairs basifixed. Petals about equal in length; standard ovate, obscurely mucronate, 3.5 by 2 mm., with a very short claw, pink inside, yellowish and hairy outside; wings obliquely spathulate, obtuse, entire or tip minutely serrulate, glabrous, red; keel-petals connate with their middle portion, tip and base free, straight; spur small, acute, white, portion in front of spur glabrous or nearly so, purplish, rest of keel-petal greenish, densely hairy outside with a few dark dots. Stamens diadelphous; anthers uniform, apiculate; pollen dark yellow. Ovary 1-ovuled, pubescent; style filiform, glabrous; stigma capitate, yellow. Pod small, ovoid, acute, tip bent down, style persistent, 2 prominent ridges on top far apart, ending about $\frac{1}{2}$ down the pod from tip; length 2.5 mm.; walls very thick; pod obviously indehiscent. Seed 1, small, somewhat compressed, glabrous.

Locality—Bombay Island: Matunga (Hallberg No. 1212, type).—Flowered and fruited in November, 1916.

SMITHIA OLIGANTHA Blatter *sp. nov.* [*Papilionacea accedens ad Smithiam salsugineam* Hance *a qua tamen distingui potest foliis pubescentibus, stipulis triangularibus mucronatis sine auriculis, bracteis non ovato-lanceolatis, bracteolis minoribus apice obtusis, floribus paucis, calycis florentis labio superiore suborbiculari, corolla alba, fructus calyce subgloboso, seminibus punctatis.*]

A small, erect herb, about 6 cm. high, branched. Stem and branches purplish, glabrous except for a few long spreading stiff hairs. Leaves abruptly pinnate; leaflets 2 pairs, 6.5 by 3.5 mm., first pair obovate, second obliquely obovate, tip rounded, downy on lower surface, margin bristly as is also the single nerve beneath, otherwise glabrous; rhachis 1.5 mm., ending in an acute tip 1 mm. long. Petiole 2 mm. long with 2 or 3 hairs similar to those on the stem, purplish. Stipules 2 by 1 mm., triangular, mucronate, membranous, purplish. Bracts similar to stipules but somewhat smaller. Bracteoles 2, immediately below calyx, elliptic-oblong, 2 by 1 mm., membranous, entire, obtuse, glabrous, veined, with a purplish hue. Flowers solitary or 2 together (only 1 specimen with 3 flowers). Calyx in flower: Lower lip 6 by 4 mm., ovate, acute, entire, fringed with hairs along margin, a long bristle on midrib, folded; upper lip suborbicular, 4 mm. long, hairs like those of lower lip; veins distinctly

anastomosing, texture membranous. Calyx in fruit much enlarged, turgid, almost globose, 9 mm. long, 6 mm. diam. Corolla white, turning yellowish; lobes about equal; standard 9 by 4.5 mm., clawed, with a few long hairs along midrib on back wings obliquely oblong, clawed; keel-petals connate only near their apex at the broadest part, with a short spur 1.5 mm. from the base. Stamens in 2 bundles of 5 each; filaments expanding downwards into a sheath. Ovary linear, slightly twisted, glabrous; style filiform, glabrous. Pod shortly stalked; joints of pod in the single specimen examined 10, (undeveloped ovules 4), thin, suborbicular, 4 mm. diam., not rugose nor reticulately venose, punctate, shaped like a dinner plate.

Locality.—Bombay Harbour: Uran, moist ground in water-course near village (Hallberg No. 14567, type).—Flowered and fruited in January 1917.

Rubiaceae

OLDENLANDIA CLAUSA Blatter *sp. nov.* [*Rubiaceae*, *pertinens* at *Oldenlandiae sectionem Kohautiam*. *Herba nana non-ramosa, quadrangularis. Caulis anguli pilis recurvis instructi. Folia decussata, lineari-lanceolata, scabra supra et in nervis infra, marginibus breviter spinosis. Stipulae membranaceae crateriformes, interpetiolares pluribus munita setis. Flores pauci axillares sub anthesi clausi. Calycis segmenta 4, setacea. Corollae tubus longus, lobi 4, valvati, concavi, valde carnosissimi. Stamina 4, inclusa; filamenta breviter, crassa; antherae dorsifixae, purpureae. Stylus filiformis, stigmata 2, permagna, recurva. Fructus 4 mm. longus (sine calycis dentibus), aliquantulum trigonus, hirsutus speciatim in parte superiore; calycis dentes distantes.]*

A small herb, about 3 cm. high. Stem woody and ascending below, then erect, quadrangular, not branched, with recurved hairs on the corners; internodes very short. Leaves decussate, sessile, narrowing to the base, crowded, 2.7 cm. long, 5 mm. broad, linear-lanceolate, scabrous-hairy above and on the nerves below, margined with short spine-like hairs pointing outwards, nerves on lower side distinct. Stipules broad, cup-like, membranous, interpetiolar, hairy, with several (about 4) long bristles which are glabrous. Flowers axillary, several in each axil, all of which develop. Calyx-teeth, 4, 1.5 mm. long, with upcurved stiff spinulose hairs. Corolla tubular, 5.5 mm. long, clavate, the top with a few erect straight spinulose hairs, 0.5 mm. long; tube slender; lobes 4, valvate, 1.25 mm. long, concave, very fleshy, especially the tip. All flowers observed, young and old ones were closed and did not open easily (self-pollination). Stamens 4, inserted just below the junction of two corolla-teeth; filaments short, stout; anthers 2-celled, dorsifixed, purple, reaching more than half way up the

upwards. Leaves pinnately 3-foliolate, exstipellate; leaflets entire, obovate, obtuse, hairy on both surfaces with hairs chiefly more or less basifixed, dotted with green glands beneath, dots turning black when old; terminal leaflet 16 by 9 mm., lateral 10 by 8 mm.; rhachis 2.5 mm. long, hairy; petiole flat above, hairy. Stipules minute, subulate, hairy. Flowers in dense, short, axillary racemes; pedicels very short, up to 1 mm.; peduncle and pedicels hairy. Calyx minute, 5-lobed, lobes about equal, subulate, very hairy, hairs basifixed. Petals about equal in length; standard ovate, obscurely mucronate, 3.5 by 2 mm., with a very short claw, pink inside, yellowish and hairy outside; wings obliquely spathulate, obtuse, entire or tip minutely serrulate, glabrous, red; keel-petals connate with their middle portion, tip and base free, straight; spur small, acute, white, portion in front of spur glabrous or nearly so, purplish, rest of keel-petal greenish, densely hairy outside with a few dark dots. Stamens diadelphous; anthers uniform, apiculate; pollen dark yellow. Ovary 1-ovuled, pubescent; style filiform, glabrous; stigma capitate, yellow. Pod small, ovoid, acute, tip bent down, style persistent, 2 prominent ridges on top far apart, ending about $\frac{1}{3}$ down the pod from tip; length 2.5 mm.; walls very thick; pod obviously indehiscent. Seed 1, small, somewhat compressed, glabrous.

Locality—Bombay Island: Matunga (Hallberg No. 1212, type).—Flowered and fruited in November, 1916.

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A small, erect herb, about 6 cm. high, branched. Stem and branches purplish, glabrous except for a few long spreading stiff hairs. Leaves abruptly pinnate; leaflets 2 pairs, 6.5 by 3.5 mm., first pair obovate, second obliquely obovate, tip rounded, downy on lower surface, margin bristly as is also the single nerve beneath, otherwise glabrous; rhachis 1.5 mm., ending in an acute tip 1 mm. long. Petiole 2 mm. long with 2 or 3 hairs similar to those on the stem, purplish. Stipules 2 by 1 mm., triangular, mucronate, membranous, purplish. Bracts similar to stipules but somewhat smaller. Bracteoles 2, immediately below calyx, elliptic-oblong, 2 by 1 mm., membranous, entire, obtuse, glabrous, veined, with a purplish hue. Flowers solitary or 2 together (only 1 specimen with 3 flowers). Calyx in flower: Lower lip 6 by 4 mm., ovate, acute, entire, fringed with hairs along margin, a long bristle on midrib, folded; upper lip suborbicular, 4 mm. long, hairs like those of lower lip; veins distinctly

anastomosing, texture membranous. Calyx in fruit much enlarged, turgid, almost globose, 9 mm. long, 6 mm. diam. Corolla white, turning yellowish; lobes about equal; standard 9 by 4.5 mm., clawed, with a few long hairs along midrib on back wings obliquely oblong, clawed; keel-petals connate only near their apex at the broadest part, with a short spur 1.5 mm. from the base. Stamens in 2 bundles of 5 each; filaments expanding downwards into a sheath. Ovary linear, slightly twisted, glabrous; style filiform, glabrous. Pod shortly stalked; joints of pod in the single specimen examined 10, (undeveloped ovules 4), thin, suborbicular, 4 mm. diam., not rugose nor reticulately venose, punctate, shaped like a dinner plate.

Locality.—Bombay Harbour: Uran, moist ground in water-course near village (Hallberg No. 14567, type).—Flowered and fruited in January 1917.

Rubiaceae

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corolla-teeth. Style filiform; stigmas 2, very large, recurved. Fruit (without teeth) 4 mm. long, slightly trigonous, 2-celled, hairy, especially in the upper part; calyx in fruit slightly enlarged, teeth distant.

Locality.—Rajputana; Mount Abu: Gora Chapra, on sandy ground (Hallberg and Blatter No. 15643).—Flowered and fruited in October 1917.

OLDENLANDIA SEDGWICKII Blatter *sp. nov.* [Rubiaceae. *Pertinet ad sectionem Gonotheceae. Accedit ad O. paniculatam Linn. sed distinguitur foliis ad basim caulis brevissimi acervatis necnon pseudo-verticillatis ovatis, pedunculis e supremo foliorum verticillo surgentibus, corollæ tubo minimo.*]

A small annual. Stem almost 0. Leaves crowded at the base of the stem, falsely whorled, ovate, 3.5 by 2.5 cm., obtuse, narrowed into the very short petiole, scabrid, hirsute. Peduncles many from the crown whorls, very slender, 10 cm. long, hirsute with short spreading hairs, laxly trichotomously branched; ultimate pedicels 12 mm. long. Flowers small, white. Corolla-tube almost 0; lobes 4, narrow, stellately spreading, with many erect moniliform hairs in the throat. Stamens 4, erect; anthers opening by slits. Ovary 2-celled, many-seeded. Stigmas capitate. Capsule compressed, as broad as long, opening by transverse slit in crown; calyx teeth minute, distant, below the protruded top of the capsule. Seeds minute, rough.

Locality.—N. Kanara: Karwar, in wet place in evergreen above the sea (Sedgwick No. 6653, type).

Note: The new species may prove in course of time to be one of those which have been included by J. D. Hooker (*Fl. Brt. Ind.* III, 69) under *O. paniculata* Linn. More material and from different localities is required before we can settle the question.

Acanthaceae

JUSTICIA HETEROCARPOIDES Blatter *sp. nov.* [Acanthaceae tribus *Justiciearum* subtribus *Eujusticiearum*. *Valde similis Justiciæ heterocarpæ* T. Anders *sectionis Calophanoidis, distinguitur tamen tota planta necnon foliis multo maioribus, petiolo juveni ciliato adulto pubescenti bracteis nullis, bracteolis duabus vel nullis, calycis segmentis valde glanduloso-hirsutis et margine scariosis et ciliatis, capsula clavata.*]

A straggling herb up to 1 m. high, stems and branches very slender, 6-angled, pubescent; internodes very long, reaching up to 10 cm. Leaves opposite, up to 6.5 by 2 cm., on both surfaces and margins shortly hairy, entire or subentire, obscurely waved, nerves prominent beneath; petiole 2.5 cm. long, with a narrow groove on the ventral side, ciliate when young, pubescent when old. Flowers sessile, clustered in the axils of the leaves. Bracts absent. Bracteoles 2 to each flower

or absent, minute, subulate, hairy. Calyx in flower 3 mm. long, in fruit 5 mm., divided nearly to the base; lobes 5, subulate, narrowly scarious-margined, very glandular-hairy and ciliate. Corolla 4.5 mm., tube about half the length of corolla, cylindric; upper lip half as long as the lower, not as broad as the midlobe of the lower, lower lip much the largest, spreading, 3-lobed, lobes rounded, midlobe largest, pink, with an angular purple spot at the base, both lips pubescent outside. Stamens 2, included; filaments glabrous; anthers 2-celled, cells spirally twisted, yellow, opening longitudinally, the smaller cell placed much higher than the larger, the lower cell spurred with a narrow, white appendage; pollen oblong-subglobose. Staminodes 0. Style filiform with a few long hairs in its lower part; stigma capitate, oblique. Fruits dimorphous; the normal one the ordinary capsular type of the family: 2-valved, 2-celled, clavate, pointed, 5 by 1.5 mm., splitting elastically from the pubescent tip, somewhat compressed, the surfaces with 2 shallow grooves in the form of a cross. Seeds 4, on short retinacula, 0.75 mm. long, obliquely cordate where it is attached, somewhat compressed, brown, covered with tubercles, the longest of which are collected in a row on one of the faces. The abnormal fruit is a nut, longitudinally compressed, apparently indehiscent, covered with 4 high and 2 slightly lower ridges divided like a cockscomb, divisions densely clothed with minute inturned-curved spines, the whole forming an ellipsoidal body somewhat stretched longitudinally, 4 mm. long. Seed 1, large, 1.5 mm. long, brown, attached near the base to the retinaculum, obliquely ovoid, very little obliquely compressed, cordate at the point where it is attached, low ridges running down the whole length of the seed, otherwise perfectly smooth.—Both kinds of fruit found in the same axil, both are of about equal frequency.

I am not sure whether this species is a good one. It certainly resembles *Justicia heterocarpa* very much. I leave it to others to judge whether the points mentioned justify the making of a new species. Not having seen the type-specimen of *J. heterocarpa* I had to rely entirely on descriptions which in this family are not always quite reliable. It is not impossible that a comparison of the type-specimen of *J. heterocarpa* with my description may reveal other differences between the two species. If, however, they should prove identical we shall be happy at the thought of having given a detailed description from a live specimen.

Locality.—Mount Abu: Shergaon (Hallberg and Blatter No. 22857. type).—Flowered and fruited in October 1916.

STROBILANTHES HALLBERGII Blatter *sp. nov.* [*Acanthaceae sectionis Eustrobilanthis*. *Habitus refert Strobilanthis callosi* Nees et multis ex partibus etiam structuram morphologicam sed differt bracteis late ovatis non viscosis, calycis segmentis linearibus

parvum tantum incrassatis in fructu, ovario subglabro, seminibus multo minoribus rectangularibus basi obliquis omnino glaberrimis.]

A large shrub, up to 3 m. high. Stem and branches rather slender, quadrangular, quadrisulcate, with a few warts, thickened at the nodes, greyish, internodes of branches 7-8 cm. long. Leaves opposite, ovate elliptic, acuminate, running down into the petiole, with dentate ciliate margin, up to 25 cm. long, about $\frac{1}{3}$ forming the winged petiole, below and above the inflorescence smaller with much shorter petioles, both surfaces rough, especially the upper which is strongly lineolate and generally with cystoliths which in dry specimens are stellately arranged with a stiff bristle in the centre of each cluster, upper surface dark green, lower paler; main nerves 12-15 pairs, prominent, with short stiff bristles below. Spikes obtuse, strobilate, about 10-flowered, generally 3 together on a common almost round peduncle about 4 cm. long and thickened at the junction of the individual peduncles where there are 2 opposite, ovate, obtuse, entire bracts with broad bases, connected by a ring, with numerous cystoliths visible when dry and stellately arranged, 8 mm. long, 4 mm. broad. Lateral peduncles 2, central 3 cm. long with a pair of bracts at a thickened node about $\frac{1}{4}$ from the top, similar to the last, but 10 mm. long, 7 mm. broad and with a narrower base. Bracts densely imbricate, one for each flower, broadly ovate, strongly vaulted, rounded at the apex, entire, with numerous cystoliths visible when dry and not stellately arranged, not sticky, pale green, 2 cm. long, almost as broad. Flowers sessile. Calyx subequally 5-partite almost to the base, segments linear, entire, appressedly hairy, veined, 17 mm. long, 2.5 mm. broad, slightly enlarged in fruit. Corolla purple, 40 mm. long, glabrous outside, with long yellow hairs within, especially at the place where the anthers of the longer stamens are resting, lobes subequal, spreading, tube about 20 mm. long, ventricose, lower third cylindric part 7 by 2 mm. Stamens didynamous, included; longer filaments 10 mm. long, bearded on one side, shorter ones 4 mm. long, glabrous; anthers oblong, yellow, 2-celled, muticous. Ovary 2-celled, subglabrous, cells 2-ovuled; style linear, 20 mm. long, with long stiff hairs directed upwards; stigma with one minute rudimentary branch and one 2 mm. long, linear. Capsule much flattened, 16 mm. long, 7 mm. broad, brown, 2-seeded. Seeds flat, very thin, rectangular, with an oblique lower part and a minute tip, brown, glabrous, 7 mm. long, 4.5 mm. broad.

Locality.—Mount Abu in Rajputana: Behind the low ridge N.E. of the Usrat valley while not a single flower was observed on the opposite side of the ridge (Hallberg and Blatter No. 22675, type). Flowered 27th October, 1916. That year was a year of general flowering.

Vernacular name.—Gahraj.

DICLIPTERA ABUENSIS Blatter *sp. nov.* [*Acanthaceae tribus Justiciearum subtribus Eujusticiearum. Affinis Diclipterae micranthae* Nees, *differt tamen cymis multifloris, floris labio inferiore integerrimo mucronato, stigmatе capitato obliquo.*]

A shrubby, straggling, much-branched plant, up to 50 cm. high. Stems and branches obscurely angular, striate, with short, longitudinal raised lines. Nodes slightly hairy. Leaves opposite, petioled, ovate, acute, subentire, sparingly hairy with short stout hairs on the margin and longer ones on the nerves beneath, very variable as to size, largest observed 5 by 2.8 cm., petiole up to 1.5 cm., lower surface lineolate. Flowers in dense axillary cymes, generally 2-3 clusters in each axil, each with about a dozen flowers, with a pair of common bracts 6 by 0.5 mm., subulate, hairy, margins ciliate; sometimes those clusters form a compound cyme with branchlets up to 2 cm. long. Flowers sessile, 2 together of which 1 may be rudimentary. Bracts 2, opposite, ovate-lanceolate, cuspidate, 1 larger 8 by 2 mm., 1 smaller 5 by 1.5 mm. with broader base, both with a densely ciliate and scarious margin from the base, on the longer for about $\frac{1}{3}$ of its length, on the smaller for half its length, rest of margin and nerves on the back with short, scattered hairs directed towards the tip, each pair of bracts enclosing generally 2 flowers, each with 4 bracteoles. Bracteoles subequal, 5 by 1 mm., lanceolate-acuminate with scarious margins from the base to above the middle, margins densely long-ciliated from about the middle to the tip, dorsal side and especially the scarious part with numerous minute sometimes glandiferous short hairs and a line of longer hairs in the middle. Calyxlobes 5, 3.5 mm. long, subulate, minutely hairy with a few longer cilia. Corolla 4 mm. long, tube 2 mm., white, glabrous, limb small, deep pink, 2-lipped, very hairy on the outside, lips entire, upper rounded, lower entire, mucronate. Stamens 2, one larger anther placed below a smaller one, both opening longitudinally; filaments glabrous, rather stout; pollen globose-oblong. Ovary pubescent upwards; style filiform, 2.5 mm. long; stigma capitate, oblique. Capsule yellowish, 4 by 1.5 mm., placentas separating elastically from the base. Seeds 4, suborbicular, compressed, brown, 1 mm. diam., covered by numerous short, stout, capitate hairs.

Locality.—Mount Abu, Dhobi Ghats (Hallberg No. 22856, type). Flowered in November 1916.

LEPIDAGATHIS BANDRAENSIS Blatter *sp. nov.* [*Acanthaceae. Folia opposita, sessilia, elliptico-lanceolata, 3-nervosa, in marginibus necnon nervo subtus medio minutissime spinoso-serrulata. Flores in spicis densis unilateralibus dispositi. Spicae multae dense fasciculatae ad radicem vel aliquantulum altius in parte ramorum foliis destituta. Bracteae dense imbricatae, fertiles quidem glabrae, ceterae autem hirsutae. Bracteolae dimorphae.*]

Calyx 5-partitus fere usque ad basim; segmenta apice spinosa, omnia intus hirsutissima, minimum etiam in margine extusque aliquantulum. Labium superius integerrimum, inferius 3 lobatum lobo intermedio crispato, lateralibus undulatis vel subintegris. Stamina inclusa. Antherarum lobi basi acuminati. Stylus basi et in linea ascendenti glandulosus. Capsula duorum seminum ovato-conico-acuta. Semina pilis albis mucilagineis elasticis cooperta.]

A prostrate herb, woody below, branched from the root. Branches up to 30 cm. long, glabrous, creeping, opposite leaves running down to next node in 2 pairs of narrow wings, those from opposite leaves nearly meeting. Leaves opposite, sessile, elliptic-lanceolate, 2 cm. long, 6-7 mm. broad, margins minutely spinous-serrulate, similar minute spines on midrib beneath; nerves 3, midrib very prominent beneath with 2 very narrow wings making it appear quadrangular. Flowers in dense one-sided spikes 2 cm. long, 1 cm. broad at about the middle. Spikes densely fascicled near the root or a little higher up on the leafless part of the branches; flowers in 2 rows of barren bracts. Bracts densely imbricate, yellowish: barren bracts 12 mm. long (including spine of 4 mm.), 3.5 mm. broad, unequal-sided, top from which the spine rises abruptly ciliate, outer surface minutely appressedly hairy; fertile bract greenish glabrous, 13 mm. long, 7 mm. broad tip less pointed. Bracteoles dimorphous: outer bracteole stiff, coriaceous, top suddenly contracted from which a spine rises abruptly, 15 mm. long (including spine of 7 mm.), 7 mm. broad, very hairy on the strong keel, less so on one side of it, glabrous on the other, ciliated. inner bracteole stiff, coriaceous, yellowish, 11 mm. long, 2.5 mm. broad, hairy outside and also inside near contraction, tip much recurved. Calyx up to 9 mm. long in flower, to 10 mm. in fruit, 5-parted nearly to base, the 2 larger outer segments 1.5., mm. broad, the lower segment 3 mm. and the 2 lateral segments 1.5 mm., all very hairy inside, the smallest also on margins and, though less so, on the outside; all have an acutely triangular, flat, stiff tip. Corolla 10 mm. long; lower part of tube 5 by 1 mm., cylindric, abruptly narrowed at base, white, above is a flattened portion, 2 mm. long and broad, at the base of which are 4 small flat spurs, 2 on each side and 2 below. The base of upper surface spotted with pink, colouration otherwise like that of the lips. Upper lip 2 mm. long, entire; at some distance from the anterior margin there are inserted some very long stiff hairs spirally twisted. Colouration: Outside yellowish mottled with light brown and purple, inside yellow, transversely mottled and striped with brown. There is on the inside a narrow longitudinal slit with winged margins, not reaching the anterior margin of the lip. Lower lip 6 mm. broad, 3-lobed about half-way down, midlobe the largest; margin of midlobe crisped, of the lateral ones waved or subentire; each

lobe has a tuft of hairs on the outside, similar to those of upper lip. Colouration: Outside faint lilac striped downwards longitudinally with pale brown and purple, inside faint lilac, with some darker spots, along the midline a row of large yellowish brown spots and along this row 2 lines of hairs on each side, much shorter than on the outside. Stamens 4, didynamous, included, inserted a little higher than the ring of spurs on lower part of throat, filaments short, yellow, glabrous; anthers 2-celled, one cell a little higher than the other, cells flattened, attached near tip, purplish, glabrous, slightly divergent, base acuminate; pollen oblong-cylindrical. Ovary small, ovoid, glabrous, 2-celled, flattened, each cell 1-2-ovuled. Style 7 mm. long, filiform, glandular at base and in a line along the style, long-hairy upwards along the same line, the line not reaching the stigma. Capsule (young) acute at apex, compressed, glabrous, 2-valved, 2-celled. Seeds 2, one in each cell, densely covered with white mucilaginous elastic hairs.

Locality.—Bandra, near Bombay (Hallberg No. 74,501, type).—Flowered in November 1916.

There is no doubt that this species belongs to the group of *Lepidagathis* which comprises the species *cristata* Willd., *Hamiltoniana* Wall. and *mitis* Dalz. It combines characters which are peculiar to each, but does not agree in the totality of characters with any of them. It is a very distinct species. Apart from many other details it can certainly be distinguished by the dimorphous bracts and bracteoles.

LEPIDAGATHIS SUBMITIS Blatter *sp. nov.* [*Acanthacea Aliquibus in partibus Lepidagathem cristatam* Willd., necnon *L. mitem* Dalz. *refert, distinguitur tamen a priore foliis linearilanceolatis undique hirsutis, bractea unica spathulata apice rotundata, bracteolis cymbiformibus crassissimis, calycis segmentis usque ad basim 4-partitis, parte corollae inferiore lageniformi 9-nervosa, labio superiore brevissimo, seminibus oblique cordatis, a posteriore autem differt bracteolis inaequalibus apice spinosis, calycis segmentis omnibus apice spinescentibus perfecte liberis usque at basim.*]

A prostrate herb, woody below, branched from the root; root very stout; branches slender, creeping, up to 25 cm. long, glabrous, thickened at the nodes, acutely quadrangular (almost with wings which are green). Leaves opposite, sessile, linear-lanceolate, acute, obscurely undulate, all over with short, stiff, stout hairs, especially on the margin and on the nerves beneath, midrib depressed above, very prominent beneath, side nerves 5-6 on each side. Inflorescence consisting of a semiglobose, very dense mass just above, the root, 5 cm. diam. (the spikes cannot be clearly distinguished and they are not disagreeable to touch). Bract 1, spathulate, herbaceous, 10 by 3 mm., apex rounded, very long-hairy all over. Bracteoles 2, the larger 10 mm. long, 3 mm. broad

at base, tapering, obliquely boat-shaped, very thick, tipped with a straight, round, hard spine about 1 mm. long, along the keel and at the base outside as well as along the whole margin very long-hairy, inside glabrous; smaller bract 7 by 1.5 mm., symmetrical, otherwise like larger one. Calyx in flower 7 mm. long, in fruit 11 mm., 4-partite to the base; 2 outer segments larger, upper obovate, 2.5 mm. broad, lower similar in shape but slightly bifid, inner segment very narrow, linear-lanceolate, all segments with a stout, round, stiff spine, all densely hairy all over with long white hairs. Corolla 10 mm. long, lower part 3.5. mm. long, glabrous, white, bottle-shaped, 9-nerved, the nerve running out into midlobe of lower lip the strongest, a greater interval between the nerves on opposite side of tube; upper ventricose part 2 mm. diam., 2 mm. long, glabrous, yellowish, with 6 faint nerves and 2 oblique, faint-brown stripes above, 3 strong nerves and a few brownish spots below, lower end of ventricose part ending in 4 small sacks, 2 corresponding to lower lip, 2 on the side. Upper lip very short, 1.5 mm. long, patently hairy outside, glabrous inside, only very slightly notched at tip where there is a tuft of short hairs. Lower lip spreading, 3-lobed, midlobe 3 times as broad as the side-lobes, broadest a little below the middle, margins of midlobe lacerate, of the side-lobes entire, the whole lower lip outside hairy—except the margin of midlobe, in centre of midlobe inside a large tuft of very long hairs; in the throat and lower lip 2 rows of long hairs, also some minute hairs in the vicinity of the sacks. Stamens 4, didynamous; filaments very short, especially of the shorter stamens, somewhat flattened, spotted with brown, glabrous; anthers 2-celled; cells about equal, one placed a little above the other, dorsifixed, muticous, opening longitudinally, flaps slightly hairy on margins; pollen oblong, yellow. Style 5 mm. long, filiform, with a row of a few long hairs for about $\frac{1}{2}$ of its length from the base; stigma minute. Capsule broad at base, tapering to a subsolid tip, scarious on back, glabrous, flattened. Seeds 2, thin, obliquely heart-shaped, covered with a dense mass of very long mucilaginous hairs.

Locality.—Madras Presidency: Bellary (Hallberg and Blatter, No. 9966, type).—Flowered and fruited in December 1916.

CARDANTHERA ANOMALA Blatter *sp. nov.* [*Acanthacea tribus Ruelliearum, subtribus Polyspermeorum. Ab omnibus Cardantheræ speciebus differt stamine unico fertili et staminodio uno, seminibus 10-12 tantum, instructis retinaculis curvatis.*]

A prostrate herb growing on damp ground, branched from the root. Stems creeping, rooting at lower nodes, subquadrangular, hairy in rows, hairs pointing downwards, swollen at nodes, internodes up to 2 cm. long. Leaves up to 28 by 11 mm. subsessile, obtuse, subentire, insensibly passing into smaller

bracts, margins strongly ciliate, upper surface hairy, lower less so, but midrib below with a few long stiff hairs. Bracteoles 2, lanceolate, as long as the calyx, very hairy on both surfaces with strongly ciliate margins. Flowers distant, solitary, axillary, sessile. Calyx 4 mm. in flower, 5 in fruit, 5-lobed, divided nearly to the base, lobes linear-lanceolate, acute, very hairy. Corolla 5 mm. long, pure white, 2-lipped, lobes twisted to the left in bud, lips of equal length, $\frac{1}{3}$ of the whole, pubescent outside as is also the upper somewhat compressed part of the tube. Upper lip shallowly 2-lobed, lower lip deeply 3-lobed, lobes rounded. Stamens 2, one fertile, one barren, included; anther-cells 2, parallel, large, oblong, erect, mucicous, separate, yellow; filament running down the whole length of the tube and adnate to it, at the point of separating a staminode with hooked tip; base of filaments of stamen and staminode joined by a sheath with long hairs. Ovary many-ovuled, pubescent. Style reaching above the calyx with upwards directed hairs; stigma shortly unequally bilobed. Capsule linear-oblong, subtetragonal, 2-grooved, 7 mm. long, 1.2 mm. diam., minutely pubescent at tip. Seeds about 10-12 in two rows, one row in each cell, on slightly upcurved retinacula, light brown, more or less tetragonal, margins hygroscopically hairy, sometimes also the surfaces partly.

I have put this species under *Cardanthera* for want of a better place. Prof. Hallberg who found this plant was in favour of making a new genus. I do not feel very confident about this proposal, especially as the new species seems to be a very variable one in other parts, though very constant regarding the stamens.

In a specimen growing in water near the Vehar Lake (Salsette) we noticed the following differences: Stem glabrous, stouter, ascending, rooting from the submerged nodes. Internodes much longer, up to 4.5 cm. Leaves up to 3.5 by 1.4 cm., ovate or obovate, margins minutely stiff-hairy, otherwise glabrous. Bracteoles much larger than calyx, up to 10 by 2.5 mm., unequal-sided. Calyx unequally deeply divided, but not near to its base, less hairy (Nov. 1916).

Another specimen gathered at Khandalla in the W. Ghats showed amongst other differences the following: Bracteoles ovate-elliptic, equal to, or shorter than the calyx. Calyx 4.5 mm. long in flower, divided only a little more than half-way down.

The stamens are evidently in a state of transition, in which direction is difficult to say. Light may be thrown on this question as our knowledge of the Indian *Acanthaceae* increases. It is a very rich family, but a great number of species have yet to be described.

The fact that another very anomalous species (*Cardanthera Thwaitesii* Benth.) has already been put under *Cardanthera* by

C. B. Clarke, has encouraged me to do the same with the new species. *Cardanthera* requires revision and its general characters must be more clearly defined.

Locality: Bombay Presidency: Vihar Lake in Salsette (Hallberg No. 9766, type), Tardeo, Bombay Island (Hallberg No. 9767, cotype).—Flowered and fruited in November 1916.

Scrophulariaceae

*Limnophila*¹ *polystachyoides* Blatter *sp. nov.* [*Scrophulariaceae*. *Accedit ad Limnophilam polystachyam, sed distinguitur foliis superioribus serrulatis (non crenulatis), bracteolis triangulari-acutis (non lineari-lanceolatis), calycis segmentis anguste triangularibus subacutis vel obtusis (non ovato-acuminatis), capsula calyce tota inclusa, 4-5 mm. longa ovoidea.*]

A paludine herb, 90 cm. long, erect or ascending from a floating portion which is densely clothed with capillaceo-multifid leaves. Stem stout, sparingly and finely muriculate, here and there with a straight hair; upper (flowering) part pentagonal in transverse section. Lower leaves all capillaceo-multifid; upper ones opposite or in whorls of 3 (in the same plant), 2 cm. long, 7 mm. broad, entire; lanceolate-acute to linear in the highest region and much shorter, sessile, serrulate (not crenulate), 3-nerved from base running up to the tip, mostly with an additional pair running half-way up. Flowers sessile in terminal spikes about 6 cm. long; lower part of inflorescence lax, upper very dense with very small floral leaves which are shorter than the flowers. Bracteoles triangular-acute, a little more than 1 mm. long. Calyx 3.5 mm. long, divided half-way down; sepals rounded-keeled on back, slightly subequal, central part of each sepal green; teeth 5, narrow-triangular, as long as tube subacute or obtuse, finely muriculate on margin and on central line of back with a few hairs at the tips. Corolla at least twice the length of calyx, white, woolly inside. Capsule entirely enclosed by calyx, 4-5 mm. long, ovoid, minutely papillose, glabrous, shining. Seeds brown, elongate, $\frac{1}{2}$ mm. long, broader at apex than at base, 4-5-sided, truncate at both ends, finely tuberculate.

Locality: Bombay Presidency: Salsette, near Marol in pool. (McCann and Blatter No. 12345, type).—Flowered and fruited in December 1916.

¹ I wanted to go back to the oldest name of the genus, viz.: *Ambulia* Lam., but Miss M. L. Green of the Kew Herbarium informs me that although the genus *Ambulia* Lam. antedates the genus *Limnophila* R. Br. it cannot be used, as the genus *Limnophila* R. Br. is a *nomen conservandum* and is conserved against *Ambulia* Lam. (1783) as well as against *Diceros* Lour. (1790) and *Hydropityon* Gaertn. f. (1805).

Euphorbiaceæ

Euphorbia panchganiensis Blatter and McCann *sp. nov.*
[Pertinet ad sectionem *Rhizanthii*; refert multis in partibus *E. acaulem* Roxb. a qua tamen distinguitur cymis multis e collo surgentibus, forma bractearum, seminibus rotundis non subacutis. Similis etiam *Euphorbiæ khandallensi* Blatt. and Hall. a qua tamen differt cymis numerosis, eisque ter tantum dichotomis, stylis ad medium connatis.]

Underground rootstock irregularly cylindric, horizontal, up to 20 cm. long and more, about 7 cm. diam., producing stout roots on all sides. Leaves broadly or narrowly lanceolate or oblong, or oblanceolate, often with wavy margin, fleshy, purple or green or red or mottled, radical, appearing after the flowers. Peduncles round or compressed, arising in dense bunches from a stout neck about 2 cm. in diameter and as long or longer (the length depending on the depth at which the rootstock lies). Cymes (together with peduncle) on the average 6 cm. long, stout, fleshy, usually reddish, purple or pink or greenish all over except for the lobes of the involucre which are light pink and the bracts which are purple, pink or whitish, branching dichotomously up to 3 times. Bracts very variable, scarious, rigid, usually turning white, at the lower forks triangular-acute or triangular-lanceolate, with wavy margin, 1-nerved, upper bracts semi cylindric, bases semi-amplexicaul, apex acute, recurved. Involucre 6 mm. across; lobes spatulate, fimbriate-pectinate, pink; glands transversely and broadly oblong. Anthers purple, opening at the apex; pollen yellow, ellipsoid. Styles connate to the middle. Capsule 4 mm. long, 7 mm. broad, trisulcate; cocci 3 (sometimes 4) compressed or sometimes rounded. Seeds globose, 3 mm. diam., smooth, black when fresh, later on grey.

Locality: Bombay Presidency: Panchgani, Tableland, 4400 ft. (Blatter and McCann No. 102 type, 103, 104 cotypes).—
Flowered: April 1926.

Notes:—This plant is very common on all the tablelands in the neighbourhood of Panchgani. It flowers from November to May, but especially during the hot season, when the laterite ground is absolutely parched and only covered with dry low grass. The flowers come up in great masses and whole purple patches of them may be seen. They have apparently no enemies, as goats, sheep, and cows do not touch them. They are mostly purple or red, evidently endowed with that colour as a protection against the sun in localities where there are no trees or shrubs or even herbs to protect them.

The leaves begin to come up with the monsoon. Green in the beginning they turn purple or red towards the end of the rainy season and by October large areas of the tablelands are coloured a deep purple or a bright red. By November the

leaves begin to disappear, but flowers and leaves are never seen on the same plant at the same time.

There are, as pointed out above, two other species which resemble the new one very closely: *E. acaulis* Roxb. and *E. khandallensis* Blatter and Hallberg. Somebody might point out that these 3 species deserve a similar fate as *E. acaulis* Roxb. and *E. nana* Royle which were united by J. D. Hooker under *E. fusiformis* Ham. (*Fl. Brit. Ind.*, V, 258). All had been considered as distinct species by Boissier (DC. Prodr XV, II, 93, 94). Hooker gave this reason for combining them: "Unlike as Royle's *nana* is to Roxburgh's figure of *acaulis*, I am convinced that these are merely forms of one, the length of the cyme probably depending on the moisture of the soil, and whether produced in open ground or amongst herbage. The Concan specimens are intermediate".

If Hooker in his specimens saw only differences in the size of the cymes, we would, in a general way, agree with him that edaphic conditions can produce a distinct growth. But even here we could mention that we have grown plants of the new species under varied conditions, *i.e.*, without water and in water, and the cymes, morphologically considered, were always more or less the same, except that they were green when out of the direct sun-light.

It must also be admitted that Boissier's descriptions of *E. fusiformis* and *E. nana* did not mention any good distinctive characters, but then we must remember what he says of the first: "*Planta ex icone et descript. cit. mihi tantum nota*", and of the second: "*Ex descriptione et icone valde rudi tantum nota*".

So much about Hooker's combination who was able to examine Hamilton's and Royle's specimens.

As regards the new species and those closely allied to it, it can be seen from the descriptions of *E. khandallensis* and *panchganiensis* that not only the size of the cymes has been considered but also their number, the bracts, the styles and the seeds. The co-operation of botanists in other parts of India is kindly invited.

Hydrocharitaceae

BLYXA ECHINOSPERMOIDES Blatter sp. nov. [*Hydrocharitaceae similis Blyxae echinospermae* Hook. f. sed differt foliis basi angustioribus quam in medio, polline subgloboso spinoso et seminibus papillosis, non spinosis.]

Stemless, densely tufted, submerged. Leaves linear, acute, narrowed from below the middle to the base, glabrous, serrulate, up to 30 cm. long, 1 mm. broad; midrib strongly prominent beneath, very swollen and spongy towards the base; upper surface flat; the leaves have a purplish hue and show irregular transverse darker lines when held against the light.

Scape growing up to 17 cm. in fruit, much compressed, spongy. Spathe ca. 65 mm. long, 4 mm. broad, 2-toothed, much flattened, each side with obscure nerves, 2 of which are slightly more prominent. Before the flower is developed there is a deep groove between these nerves along the empty part of the spathe; the spathe attains its full length already in bud. Flowers hermaphrodite, solitary, sessile in the spathe, up to 11.5 cm. long; bud trigonous. Sepals 3, 10 mm. long, 1 mm. broad, green, streaked with purple, linear, obtuse. Petals 3, 10 cm. long, $\frac{1}{3}$ mm. broad at base, filiform, yellowish, tip twisted, white. Stamens 3, about half as long as the sepals; anthers 1 mm. long, narrow, erect, shortly beaked, yellow; pollen subglobose, covered with numerous short spines. Styles 3, up to 18 mm. long, linear, terete, at first white, later greenish; stigma obtuse, papillose. Capsule terete, long-beaked, seed-bearing for about $\frac{2}{3}$ of the part covered by the spathe. Seeds white, ellipsoidal, about $1\frac{1}{2}$ mm. long not counting the tails, strongly papillose, with a curved tail at each end slightly longer and shorter than the seed respectively. (Some plants have seeds with both tails longer than the seed itself and in this case the papillae are longer.)

Locality: Bombay Presidency: Vehar Lake, Salsette (Hallberg No. 1555, type).—Flowered and fruited in November 1916.

Note: The genus *Blyxa*, Noronha is in a bad state. J. D. Hooker (*Fl. Brit. Ind.*, V, 660) makes the following remark: "Under this genus the following Indian forms occur. These present such diverse characters that it is difficult to suppose they do not represent species; on the other hand, water plants are so variable, and herbarium specimens of them are so unsatisfactory, that I must leave it to Indian botanists to work up the genus".

J. D. Hooker mentions 7 species of which 6 were described by him. The great difficulty is to fix on constant characters.

The leaves cannot be considered as constant, neither their size nor their shape. *Blyxa echinosperma* Hook. f. has leaves measuring from 15 cm. to 1.2 m., *B. octandra* Planch. from 20-60 cm., *B. ceylanica* Hook. f. from 15-60 cm. If the limits of length in other species are not so far apart, it must in all probability be ascribed to the fact that only one or a few specimens were examined.

The shape of the leaves is just as little reliable. Hooker has grouped his forms under 2 headings: (1) "Leaves broad at the base, narrowed upwards to the acuminate tip" and (2) "Leaves narrowed from below the middle to the base".

The new species comes very near *B. echinosperma*, and may prove some day to be identical with it, and still its leaves are narrowed from below the middle to the base, whilst the leaves of *B. echinosperma* are broader below.

The scapes and spathes are equally variable, except that the male flowers are enclosed in a 3-toothed spathe, while the hermaphrodite and male flowers are surrounded by a 2-toothed spathe. (Hooker seems to be mistaken when he says that the spathe of the female flowers is that of the male).

"Dioecious" and "hermaphrodite" flowers seem to form a good character. The sepals and petals seem to be fairly uniform, but differ in size and colour, characters which do not count much in water-plants.

The number of stamens may be utilized in classification as soon as they are better known.

Pollen, fruit and seed seem to vary a good deal in the same species.

Before me are 2 specimens gathered in the same locality and on the same day. I have every reason to assume that they are identical with the new species. They were described from fresh specimens and they were found to agree with the new species though disagreeing in quite a number of characters which in the meantime I consider as variable. If they should, in course of time, prove to be constant, the two specimens must be treated as new species.

1st specimen: Flowers up to 16 cm. long. Spathe 6.5 cm. long, 4 mm. broad. Pollen ovate-oblong, slightly oblique, less spiny than in the new species. Seeds narrowly ellipsoidal, with a stout tail nearly as long as the seed, broad at its base where there is also a small process; length of seed and tail 1.5 mm.; surface minutely, irregularly wrinkled, not papillose or striate. The younger seeds are exactly like the younger seeds of specimen 2.

2nd specimen: Scape up to 27 cm. long in fruit. Spathe 3.5 mm. broad. Pollen more or less angular (somewhat obpyramidal with numerous short spines. Seeds not half the length of new species, with a tail shorter than the seed at one end and a minute process at the other, not papillose, surface minutely interruptedly striate. Younger seeds broadly oblong, umbonate.

I am afraid it will take a long time before we are able to give a somewhat satisfactory account of this widely spread genus in India. Also here I invite my colleagues' co-operation. But the only way of obtaining reliable information is to write a detailed description from fresh specimens or to keep the specimens in formalin. Herbarium specimens, even well prepared, are not of much use.

HYDRILLA POLYSPERMA Blatter *sp. nov.* [*Hydrocharitacea. Similis Hydrillæ verticillatæ* Presl, *sed differt spatha feminea apice acuta non bidentata, stigmalibus non fimbriatis sed coopertis pilis stigmaticis, seminibus numerosis ovatis basi truncatis, testa non producta.*]

A submerged, green, delicate, leafy fresh-water plant, form-

ing large masses. Stem much branched. Branches filamentous, from $\frac{3}{4}$ mm. diam. to almost capillary. Leaves opposite or more usually in whorls of 3 or 4, seldom 5, 11-12 mm. long, 2 mm. broad, linear-lanceolate, finely spinulose-serrulate, tip spinous, mid-rib slightly paler than the rest. Flowers dioecious. Male flowers solitary in a bell-shaped spathe, female flowers usually solitary in a tubular spathe. Male flowers: Spathes usually 2 or 3 in a whorl, bell-shaped, membranous, 3 mm. long, slightly 2-lobed, with about 10 long fleshy conical teeth projecting outwards from a little below the margin of the mouth forming a subregular ring. Flowers minute, short-stalked, solitary. Sepals 3, broadly ovate, deeply concave, obtuse, about 2 mm. long. Petals 3, strap-shaped, slightly widening towards apex, tip triangular, slightly longer than sepals, bent inwards, included. Stamens 3, about as long as sepals; filaments twice the length of the anthers, stout; anthers large, bilocular, opening longitudinally; pollen globose. Female flowers: Spathe 8 mm. long, narrow-tubular, apex acute. Perianth 5 mm. long. Sepals 3, oblong-lanceolate, flat, slightly incurved at tip and mucronate about 1 mm. broad in the upper third, greenish white. Petals 3, slightly incurved at tip, almost identical in shape with the sepals, but smaller, white. Ovary cylindrical, produced into a very slender beak, full of mucilage; ovules many, anatropous. Styles 3, fleshy, slightly tapering, about half the length of the petals, covered with long stigmatic hairs, (not fimbriate). Seeds many, small, ovate, truncate at base with a strong ridge running down on one side from the apex, getting broader towards the base (testa not produced at either end).

Locality.—Rajputana: Mount Abu, Naki Talao, about 4,000 ft. (Hallberg and Blatter No. 11189, type).—Flowered and fruited in October 1916.

Zingiberaceæ

CURCUMA INODORA Blatter *sp. nov.* [*Zingiberaceæ* subgeneris *Eucurcumæ* K. Schum. sectionis *Exanthæ*. *Rhizoma radicebus copiosis filipendulis tuberiferis instructum; tubera intus alba, inodora. Folia cum floribus oriunda, immatura 24 cm. longa, 10 cm. lata, apice acuminata, plicata; petiolus 16 cm. longus, profunde concavus, alatus. Inflorescentia vernalis, lateralis; pedunculus 10 cm. altus. Bractee inferiores breviores et latiores superioribus, pallide virides rubro-tinctæ, superiores roseæ apice purpureæ, omnes apice truncatæ, rotundatæ vel emarginatæ. Calyx 1 cm. longus, tubuloso-trigonus, apice breviter et irregulariter 3 lobus; tubus minutissime pubescens. Corolla 3.5 cm. longa; tubus 2 cm., lobi 1.5 cm. longi; lobus dorsalis apiculatus, lateralibus dimidio latior, lobi laterales retusi, omnes ovati vel ovato-lanceolati, concavi, purpurascetes, ad apicem subsaccati. Stamina et labellum subæquilonga, aliquantulum excedentia petala. Stamina nodia oblonga, 5-7 mm. lata, truncata, purpureo-rubra. Labellum*

obovatum obscure 3-lobatum vel subintegrum, 1.5 mm. latum, marginibus crispum, purpureo-rubrum, ad medianum intense flavum per totam longitudinem. Filamentum 3 mm. latum, purpureo-rubrum connatum cum staminodis; anthera alba, basi et calcaribus roseis. Ovarium dense hirsutum. Stylus roseus; stigma album, obliquum, bilobum.]

Base of plant a rhizome; root-fibres numerous, bearing ovoid tubers 4 cm. from their base; tubers 2.2-5 cm. by 1.5-2 cm., white inside, divided into an outer and inner part by means of a membrane visible in a section as a distinct line following the outlines of the tuber, no smell, taste rather pleasant. Leaves appearing together with flowers, all enclosed in 2 olive or purplish green sheaths, which are many-nerved, rounded at tip, sometimes apiculate, 8 and 15 cm. long respectively. Young leaf: Blade 24 by 10 cm. with the apex acuminate, plaited with about 20 pairs of ridges following the main nerves; petiole 16 cm., deeply concave, winged. Inflorescence vernal, lateral; peduncle 10 cm. long, narrow below, stout above, with many sheaths at base. Lower bracts much shorter and broader than upper, pale green tinged with pink, margins wavy, tips of all the bracts truncate, rounded or emarginate; upper bracts forming a coma, rose-coloured, tips purple. Calyx 1 cm. long, tubular, trigonous, widening upwards, shortly and irregularly 3-lobed at apex; tube sparsely minutely pubescent. Corolla 3.5 cm., tube 2, lobes 1.5 cm., tube sharply bent in a little (3mm.) below the sinuses at which point it widens out. Up to this point tube below with 2 anterior fleshy whitish ridges with a furrow between, together 3 mm. broad. Dorsal lobe $1\frac{1}{2}$ times as broad as side lobes, apiculate, side-lobes retuse, all ovate to ovate-lanceolate, concave, purplish, obscurely nerved, subsaccate near tip. Staminodes and lip subequal in length, surpassing tip of petals by 2 or 3 mm. Staminodes oblong, 5 mm. broad near tip, 7 mm. lower down, truncate, purplish red. Lip obovate, obscurely 3-lobed or subentire, 15 mm. across, margins crisped, apex bifid, with a faint longitudinal furrow on both sides; colour purplish red, a bright yellow band running longitudinally, broadest anteriorly, fainter below and on the outside, in its broadest part about 5 mm. Filament 3 mm. broad, connate with staminodes below, purplish red, free portion bent in; anther white with pink base and spurs which are bent inwards. Ovary 3 by 2 mm., densely hairy, hairs directed upwards. Style pink; stigma oblique, white, bilobed, anterior margin straight, posterior with two diverging processes.

Locality.—Bombay Presidency: Moolgaum, Salsette (Hallberg No. 12724, type).—Flowered in June 1917.

CURCUMA PURPUREA Blatter *sp. nov.* *Zingiberacea subgeneris Eucurcumæ* K. Schum. *sectionis Mesanthæ* Horan. *Accedit ad Curcuman decipientem* Dalz. *sed differt uno tubere*

sessili intus pallide flavo foliis multo latioribus, bracteis floriferis apice non saccatis, corolla multo longiore, labello obscure 3-lobato vel integro, corollae tubo calyce triplo longiore, corollae segmentis apice subsaccatis. Similis quoque multis in partibus Curcumae inodora Blatter, sed distingui potest inflorescentia autumnali, centrali et absentia tuborum sessilium, corollae lobo dorsali longe mucronato. lateralibus autem rotundatis, stylo albo.

Root-fibres thick; one sessile, transverse tuber, 4 cm. long, 1 cm. diam., pale yellow inside, faintly aromatic. Leaves and flowers contemporary. Leaves about 20 cm. long and 8 cm. broad, acuminate, plaited, petiole about 15 cm. long, deeply furrowed, winged. Lower bracts shorter and broader than the upper, pale green, tinged with pink, margins wavy, upper bracts forming a coma, rose-coloured, tips purple, all the bracts truncate, rounded or emarginate, (not saccate). Calyx 10 mm. long, tubular, trigonous, shortly and irregularly 3-lobed at apex, widening upwards. Corolla 4.3 cm., tube 3 cm., beginning to widen about 1.7 cm. from the base, but not sharply bent-in, white (without fleshy ridges); dorsal lobe $1\frac{1}{2}$ times as broad as side-lobes, long-mucronate, side-lobes rounded at apex, all ovate to ovate-lanceolate, concave, purplish, subsaccate at tip. Staminodes and lip almost of equal length, surpassing tip of petals by a few mm. Staminodes oblong, 8 mm. broad, truncate, purplish red. Lip obovate, obscurely lobed or subentire, 15 mm. across, margins acrisped, apex bifid, colour purplish red, a bright yellow band running longitudinally, about 8 mm., broad, in front occupying almost the whole midlobe. Filaments 2 by 3 mm., connate with staminodes below, purplish red; anther white, base with spurs pink. Ovary densely soft-bristly upwards. Style white; stigma oblique, bilobed.

Locality.—Western Ghats: Khandalla (Hallberg No. 14566, type).—Flowered during the early monsoon 1917.

KAEMPFERA EVANSII Blatter *sp. nov.* [*Zingiberaceae* tribus *Hedychiearum* pertinet ad genus *Kaempferam* sectionis *Monolophi*. *Herba perennis. Caulis crassus, foliosus ad 60 cm. altus. Folia lanceolata vel elliptica, acuminatissima, infra pubescentia, in petiolum brevem decurrentia, usque ad 27-36 cm. longa, 8 cm. lata. Flores laxè spicati, terminales. Bractea uniflorae, spathaceae, glabrae, 2.5 cm. longae. Calyx tubuloso-spathaceus, 4.5 cm. longus, membranaceus, apice fissus per 1 cm. Corolla glabra, tubus 7 cm. longus, pallide aurantiacus, lobi 4 cm. longi, anguste lineares marginibus involutis, pallide flavi. Staminodia 2, anguste linearia, 5 cm. longa, 3 mm. lata, alba. Labellum 4.5 longum, 2.5 cm. latum, cuneatum, bifidum per 1.5 cm., album unguiculo aurantiaco. Stamina 4 cm. longa, rubra. Antherae 2.5 mm. lata, lobi in-aequales, 7 et 6 cm. longi, paralleli, basi liberi. Connectivi appendicula subulata, subflava, 1 cm. attinentia. Ovarium subtrigonum, ca. 1 cm. longum, glabrum,*

3-loculare ovulis multis. Stylus flavus, generatim antherarum lobis quidem sed non appendiculis longior. Stigma capitellatum penicillatum.]

A perennial herb. Stem about 60 cm. high, stout, green, clothed with the sheaths of the distichous leaves. Leaves 36 by 7 to 27 by 8 cm., lanceolate or elliptic, very acuminate, finely pubescent beneath, running down into a very short petiole. Flowers laxly spicate, terminal, the lowest 3 cm. apart, faintly fragrant; axis of inflorescence angular, grooved, glabrous. Bracts 2.5 cm. long, 1 to each flower, spatheaceous, enclosing the calyx, nerved, glabrous. Calyx 4.5 cm. long, tubular, narrow, spatheaceous, membranous, split for about 1 cm., limb obtuse, nerved. Corolla glabrous, tube 7 cm. long, narrow, cylindrical, pale orange; lobes 4 cm. long, narrowly linear, broadest (4 mm.) a little below the acute contracted tip, 3-nerved, with the margins rolled in, pale yellow. Staminodes 2, narrowly linear, 5 cm. by 3 mm., broadest near the obtuse tip, 3-nerved, white. Lip 4.5 by 2.5 cm., broadest outwards, cuneate, bifid for 1.5 cm. white, fading yellow, with a distinct orange claw. Stamen 4 cm. long, red; filaments very narrow; anther 2.5 mm. broad, anther-cells unequal, parallel, 7 and 6 mm. long respectively, with a yellow line, free at the base; connective crested, produced into 2 subulate unequal yellowish tails, reaching 1 cm. in length. Ovary slightly trigonous, not 1 cm. in length, glabrous, 3-celled; placentas axile; ovules numerous; 2 thick, conical, obtuse, bright yellow excrescences, 3 mm. long, on ovary at base of corolla-tube (rudimentary styles). Style yellow, very slender, glabrous, generally overtopping the anther-cells, but not the tails. Stigma small, yellow, capitellate, transversely compressed, penicillate, with a depression on top.

Locality: Madura District: Gathered on the High Wavy Mountain, 5,500 ft., in May 1917, flowered in Bombay in September 1917 (Hallberg and Blatter No. 7744, type).

Amaryllidaceæ

PANCRATIUM DONALDI Blatter *sp. nov.* [*Amaryllidaceæ, accedens ad Pancratium parvum* Dalz. necnon *P. St. Mariae* Blatter and Hallberg. *Differt a primo corona lata conica et scapo fortissimo, ab altero stylo non incluso, er perigonii tubo multo longiore necnon distincte trigono.*]

A perennial glabrous herb. Bulb globose, ca. 4 cm. diam., tunicate, brown; neck cylindric, up to 3 cm. long. Leaves at time of flowering 2, leathery, lanceolate, acute or obtuse, reaching about $\frac{2}{3}$ up the scape. Scape very stout, compressed, almost smooth, or striate or ribbed, up to 10 cm. long, green. Flowers fragrant, 2-5 in an umbel. Spathe¹l.

very broadly ovate, bifid at apex, membranous, whitish, transparent. Pedicels up to 1 cm. long. Perianth-tube up to 9 cm. long, greenish below, white above, distinctly trigonous, slightly dilated above; lobes white, reaching 3 cm. by 1 cm., broadly lanceolate, suddenly contracted into an awl-shaped apiculus 3-4 mm. long, at the base of the apiculus above a small horn pointing inwards. Staminal cup 1 cm. long, broadly conico-trigonous, with 6 longitudinal folds truncate at apex with bifid teeth between the filaments. Filaments longer or shorter than teeth of cup. Anthers about 4 mm. long, yellow. Style filiform, about 11 cm., protruding for about 1 cm. beyond the anthers. Stigma subtrilobed. Ovary cylindrical-trigonous, 3-celled, many-ovuled.

Locality: Bombay Presidency: Panchgani, Second Tableland in grass on laterite soil, exposed situation, only found in an area of about 50 sq. yards (Donald Elkins No. 758, type, 759, 760, 761 cotypes).—Found flowering 10th June, 1928.

Liliaceae

CHLOROPHYTUM GLAUROIDES Blatter, *sp. nov.* [*Liliaceae, accedit ad C. glaucum* Dalz., *sed differt forma foliorum, petiolo longo, scapi vaginis paucis, perianthii segmentis longioribus et latioribus anguste oblongis, capsulis triquetris, loculis 6-7-ovulatis, seminibus basi cordatis.*]

Root-fibres very numerous, cylindric, white, up to 30 cm. long. Leaves 6-14, radical, membranous-leathery, lanceolate, long-acuminate, grass-green above, glaucous beneath, glabrous, attenuated into a long winged petiole. Scape strict, simple, up to 65 cm. long, smooth, dark green, provided with 1 or 2 long, lanceolate-acuminate chartaceous sheaths 8 cm. long and 15 mm. broad at the base. Higher up the sheaths become smaller till they pass into broadly ovate or ovate-lanceolate, acuminate, almost amplexicaul, scarious bracts which are persistent (not forming a coma before flowering), brown in the upper part when young, later on turning brown all over, the lower part being almost brown-black, with many black nerves in the central part, 1.5-3 cm. long, smaller upwards: higher up the bracts form a tube surrounding the flowers with their bracteoles, greenish-white, about 8 mm. long, 4 mm. broad, slightly compressed, truncate at apex and brown, with 2 teeth on opposite sides, one tooth acuminate and longer, the other acute. Flowers white, in simple, dense racemes, 15-30 cm. long, 1.5-2 cm. wide. Pedicels of bud ascending, when the flower opens at right angles to the axis and again ascending in fruit, 5-15 mm. long, stiff, comparatively stout, white, articulated about the middle or higher up, 2-3-nate, elongated in fruit up to 22 mm., but only the part below the articulation. Bracteoles 1 for each flower; bracteole of the flower which

opens first very small, oblanceolate, white, scarious, about 3 mm. long, of the second flower broadly ovate, sub-acuminate with a tuft of tiny hairs at apex, white, of the third flower very broadly obovate, suddenly contracted into an acuminate apex which has a tuft of small hairs, white with green in the centre, margin brown. Perianth segments up to 13 mm. long, 4 mm. broad, narrowly oblong, subobtuse or minutely apiculate, inner lobes slightly broader, all spreading, later on deflexed. Filaments white, up to 8 mm. long, minutely papillose; anthers yellow, 4-5 mm. long, basifixed, slightly bilobed at base, introrse, longitudinally dehiscing. Ovary 3-lobed, green. Style up to 1 cm. long, white; stigma minute, not thicker than the style. Capsule coriaceous, emarginate, triquetrous, acutely 3-winged, 10 mm. long and broad. Seeds 6-7 in each cell, orbicular, cordate at base, flat, convex and coarsely wrinkled on the side touching the carpel, slightly concave on inner side.

Locality: Bombay Presidency: Panchgani, beyond the Mahomedan High School (Blatter P73). Flowered middle of August 1925.

Usually only 2 or 3 flowers are open at the same time.

The fact that the pedicel of the bud and the fruit is ascending whilst it is at a right angle to the axis when the flower opens can be explained as a mechanical reaction. As the pedicel is very short there is no room for the spreading flower to expand freely as long as the pedicel forms an acute angle with the axis of the raceme.

In the above diagnosis I have described bracteoles. In no description of Indian *Chlorophytums* have bracteoles been mentioned. There is scarcely a doubt about the morphological character of the structures which I called bracteoles, and which I have examined repeatedly. It is quite possible that those details in a dried state have escaped the eyes of observers as it has happened so often, especially in Monocotyledons. The descriptions of most of our fleshy Monocotyledons are in a deplorable state. These plants cannot be satisfactorily described from dried specimens. Indian botanists would render a great service by writing as detailed descriptions as possible from live specimens, and by sending them together with well-preserved specimens to Kew or the British Museum. This would lead, in course of time, to the elimination of many mistakes that have crept into the treatment of the Monocotyledons.

In the key to the *Liliaceae*, J. D. Hooker (*Fl. Brit. Ind.*, VI, 301) characterizes the ovary as 4-6-ovuled. In our species each cell contains 6-7-ovules.

Araceae

ARISAEMA LONGECAUDATA Blatter *sp. nov.* [*Aracea sectionis Clavatorum. Similis Arisæmati Leschenaultii* Bl. *sed*

difert spatha viridi longitudinaliter albo-vittata, spatharum acuminibus longissimis, spadice fere duplo maiore, spadiciis appendice uniformiter cylindrica a basi leviter incrassata minime claviformi, multo longiore, stigmatibus non sessilibus, floribus masculis omnibus stipitatis.]

Whole plant reaching 1 m. and more, as a rule dioecious. Tuber depressed globose; root-fibres numerous, from the upper side of the tuber, less tough than in *A. Murrayi*. Leaf solitary, peltate; petiole stout, straight, up to 60 cm. long, cylindric, smooth, shining, green and purple-marbled; leaflets generally 6, whorled, petiolulate with petiolules 5 mm. long, very variable even in the same leaf, obovate-cuneate or broadly lanceolate or oblong-lanceolate, all caudate-acuminate with acumination up to 4 cm. and capillary towards end, dark green above, paler beneath, shining, up to 22 cm. by 9 cm., intramarginal veins 2, nerves depressed above, prominent beneath. Peduncle up to 40 cm., cylindric, thinner than petiole, of the same colour, but green near top. Male spathe up to 30 cm. long, grass-green throughout, striped externally with white; tube elongate-cylindric, up to 8 cm. long, 2 cm. diam., widening into an ovate-lanceolate, long caudate-acuminate limb, 7 cm. long (without acumen) and 4 cm. broad, slightly reflexed near the tube, acumen 13 cm. long; limb deflexed, pendulous. Male spadix up to 9 cm. long, exerted from the tube for 1 cm., conical in the flower-bearing part which is about 5 cm. long, appendix about 4 cm. long, straight, slightly thickened at the base, then more or less uniformly cylindric, blunt at tip. Stamens white; filaments stout, about 2 mm. long, usually 3 united carrying 6, sometimes 7-8 anther-lobes which are shortly ovoid or globular. Female spathe up to 45 cm., tube 10 by 2.5 cm.; limb (without acumen) 13 by 6 cm., acumen 22 cm. Female spadix: Flower-bearing part about 5.5 cm. long, above female flower some neuters for 5 mm., appendix 4 cm. long, like male. Female flowers arranged in many parallel dense spirals. Ovaries spherical or shortly oblong, green, unilocular, 1-3-ovuled; style very short, stout, green, stigma disk-like, white, covered with crystalline protuberances. Neuters above the female flowers up to about 17, subulate.

Abnormalities: In a female spadix (call it incipient or atavistic androgynous spadix) were noticed above the female flowers 2 male flowers, each consisting of 2 filaments united below and free above, each filament with two distinct white anther-lobes separated from each other by a broad green connective.

Mixed with the neuters of a female spadix the following were observed:

- (a) One bisexual flower on 2 pedicels united at the base: one pedicel bearing an undeveloped ovary and

well-developed style, the other pedicel one complete anther.

- (b) Some male flowers: 1 filament with an anther-lobe.
- (c) Some male flowers: 1 filament with a complete anther and connective.

Flowers and leaves seen at the same time. Spathe usually reaching to up below the leaf, the leaf thus protecting the flower; the spathe is never higher than the leaf. The spathes turn pale and then yellow.

Locality. Bombay Presidency: Mahableshwar, very common, covering large areas in the woods, also found on trees (Blatter No. P 10, type).—Flowered by the end of June 1925.

Note: This is one of the commonest plants in the woods of Mahableshwar during June and July. The straight stout peduncle and petiole surmounted by the large peltate leaf made up of 6 long-caudate leaflets and the long pendulous acumen of the spathe at once catch the eye. It is strange that this plant has not been observed by H. M. Birdwood or T. Cooke or any other botanist. Is it because it is a monsoon-plant when visitors do not stay at Mahableshwar? Or has it been mistaken for *A. Leschenaultii*, the only other *Arisæma* which the new species resembles? Cooke mentions two specimens of that species, but he has not seen them (vol. II, 821).

Hooker f. (*Fl. Brit. Ind.*, VI, 504) gives "Western Ghats, from the Concan southwards" as locality for *A. Leschenaultii*. I do not know on what specimens he founded that locality or whether he simply accepted Dalzell and Gibson's word, their specimen from "between Ramghat and Belgaum" not being at Kew. There are authentic specimens to show that the plant occurs in the Nilgiris and Ceylon, but nobody seems to have seen the true *Arisæma Leschenaultii* in the Bombay Presidency. Requires further investigation.

The new species also resembles in some respects *Arisæma caudatum* Engler. This is a species only partly known. Hooker f. (*Fl. Brit. Ind.*, VI, 508) had seen no specimen and described it from a drawing by Stocks who had seen the plant in the Konkan. Engler described the species, as he says himself, from a badly dried specimen. We reproduce Engler's description which is more complete than either Hooker's or Cooke's. It may help future botanists to identify the plant in the field.

Arisæma caudatum Engl in *DC. Mon. Phan.*, II (1879) 559, in Engler's *Pflanzenreich* IV, 23F (1920) 183, fig. 39; Hook. f. *Fl. Brit. Ind.*, VI (1893) 508; Cooke *Fl. Bomb.*, II, 822.

Leaf solitary. Dioecious (Hooker and Cooke speak of the spadix as androgynous), Petiole stout, narrowly sheathed; blade radiatisect; segments 7, oblong-elliptic, long and very narrowly acuminate, ending in an aristiform 1-1.5 cm. long

tip, shortly cuneate at the base, 15-17 cm. long, the middle segment 5 cm. broad, the lateral ones narrower, lateral nerves archingly ascending at an acute angle, 7-9 mm. distant from each other, united into an intramarginal nerve 2-3 mm. inside the margin. Peduncle much shorter than the petiole. Tube of spathe long-infundibuliform, 6-7 cm. long, above 2 cm. diam., margin of the throat slightly recurved, blade erect, oblong-lanceolate, about 8 cm. long, 3 cm. broad below, contracted into a narrow linear tail 8 cm. long. Inflorescence of spadix about 5 cm. long; appendix stipitate, thickened at the base, only 1.5 cm. long.

This plant has not been observed since Stock's time.

As I am just dealing with the genus *Arisæma* I wish to complete Hooker's and Cooke's descriptions of *Arisæma Murrayi* Hook. which are not always correct in every detail and sometimes ambiguous and misleading. This plant is one of the commonest at Panchgani, but it took me a long time before I was able to identify it with *A. Murrayi* simply on account of some general unqualified statements made by Cooke and Engler.

Arisæma Murrayi, Hook. in *Bot. Mag.*, (1848) t. 4388.

Tubers hemispheric, up to 5 cm. diam., root-fibres crowded arising from the upper side of the tuber, fleshy, white, rather tough. Sheaths broadly linear-oblong, or oblong-lanceolate, mucronate, lowest white, tipped purple, the others pale or dark purplish, the uppermost up to 30 cm. long, the lower much shorter. Leaf one, coming up shortly after the peduncle, but coexistent with the flower and finally reaching higher than the flower, peltate, glossy dark green on the upper surface, paler and shining beneath, divided to the base into 5-11 segments. Segments sessile, ovate-lanceolate-acuminate or oblong-lanceolate-acuminate or obovate-lanceolate, cuneate at base, with 2 intramarginal nerves, the outer faint, the inner distinct and about 1 cm. from the outer, otherwise penninerved, the nerves from the midrib meeting the inner intramarginal nerve, all the nerves depressed on the upper surface and very prominent on the lower, the central one very pale green, margin either entire or dentate-sinuate and wavy, length from 6-15.45 cm., breadth 4-6.15 cm., acumen 1.5 cm. Petiole 30-40 cm. long, 2 cm. diam. below, 1 cm. near lamina (in a specimen 60 cm. high), cylindrical, striate, stout, green or purplish-red or greenish purple or green streaked with purple, sheathed for one half or less. Peduncle 30-90 cm., green or purple, cylindrical, thinner than the petiole, and slightly thinner towards the apex, shorter or longer than the peduncle. Spathe striate, up to 14 cm. long, tube cylindrical, 2.5-6 cm. long, 1-3 cm. wide, grass-green inside and outside with white striae, especially upwards; slightly constricted at top and there broadening into a broadly ovate-acute or ovate-acuminate, somewhat cucullate limb, limb up to 11 cm., incurved, sometimes at a right

angle, at other times at 45° to the axis, pure white or sometimes with a green band or blotches along the centre, purple inside and outside where it meets the tube, the purple sometimes very faint or absent, especially outside, veins many, parallel, very distinct outside, faint inside, acumen mostly tinged with a bright green. Spadix narrowed from the base upwards, conical; appendage very variable, 3-7 cm. long, greenish at base, becoming deep purple above and lighter in colour at the tip; exerted (I have not seen it included in the tube), following more or less the bend of the limb, tapering to a fine point. Spadix androgynous or unisexual. Androgynous spadix: Female flowers below, crowded, covering about 2-3 cm. of the conical axis; ovaries arranged in many parallel spirals, sessile, style very short, stout, stigma disk-shaped, white; then follows an empty space of 3-4 mm. or the male flowers follow immediately, covering 1-2.5 cm. of the spadix, consisting of groups of 3-8, mostly 6 anther-lobes on a common very short stalk, sometimes a few subulate neuters above the anthers. Male spadix: Anther-bearing part up to 3 cm. long, 2-7, mostly 4 anther-lobes on a common stalk about 2 mm. long, globose or shortly ovoid, opening by a slit on top. Female spadix never seen. Ovaries when ripe, bright red, variously compressed.

The anthers are faintly scented.—The plants with male spadices are generally only half the size of those with androgynous spadices.

This is a most variable species as can be seen from the measurements given of the different parts and organs. When fresh the identity of the plant cannot be mistaken though at first sight some specimens are most puzzling; but if one has to deal with dried specimens only, one can easily feel inclined to make new species where there are only extremes of size or variation of shape of which in nature one finds an endless series of transition-forms generally not represented in herbaria.

The description prepared from one specimen in such a case must necessarily be wrong, unless it be supplemented by a number of notes referring to almost and correcting every detail mentioned in the description in order to give a complete and reliable picture of the species and not only of one specimen. But this kind of work can only be carried out with fresh material and with plenty of it. There is a vast field for the Indian botanist and we can help materially our colleagues in Europe who, in spite of their painstaking labour, have to confess in the end: "*Vidi siccum.*"

On a new Theropod Dinosaur (*Orthogoniosaurus Matleyi*,
n. gen. et n. sp.) from the Lameta beds of
Jubbulpore

By H. C. DAS-GUPTA

INTRODUCTION

The tooth that is described here was obtained from the green marly clay of the Lameta beds developed in the Jubbulpore Cantonment. These beds have been elaborately described by Dr. Matley¹ who has also given us a short account of the history of the fossil bones found at this locality from 1828 to 1917, when an interest in the study of the Lameta fossil reptiles was revived by Dr. Matley himself. I had an opportunity of visiting this locality in charge of a party of students from the Presidency College, Calcutta, in 1924, and succeeded in making a small collection including the tooth that is described below.



Orthogoniosaurus
Matleyi n. gen.
et n. sp. x 2.

DESCRIPTION.

The tooth on which the genus *Orthogoniosaurus* is established is rather small in size, the preserved part measuring about 27 mm., compressed and with a posterior edge which is denticulated and straight. The serrations are rather blunt, set at right angles to the edge and possibly run along the entire length, though, on account of the incomplete nature of the lower part of this edge, nothing definite can be said regarding this point. The anterior edge is convex and not denticulate. The exposed face appears to be slightly convex.

SYSTEMATIC POSITION.

Prior to 1917 only remains of Sauropod dinosaurs had been known from the Lameta beds, but it was the investigation of Dr. Matley which, for the first time, brought to light the remains of carnivorous and

¹ *Rec. Geol. Surv. Ind.*, Vol. 53, pp. 142-164, 1921.

armoured dinosaurs from this region. The carnivorous dinosaurian remains, according to Dr. Matley¹, include teeth of a megalosaurian type; while the armoured dinosaurian remains have been described as a new genus (*Lametasaurus*) by Dr. Matley². Besides the megalosaurian teeth mentioned above, *Megalosaurus* *sp.* has also been recorded from the Cretaceous beds of Southern India by Lydekker³, but the tooth that is described in this note is quite distinct from megalosaurian teeth which have got both their edges serrated. As remarked by Gilmore⁴, 'the serrate edges on the anterior and posterior borders are characteristic of nearly all Theropoda' and I think that the absence of any denticulation on the anterior border is a sufficiently important character on which a new genus may be established. Among the Cretaceous Theropods *Orthogoniosaurus Matleyi* may be compared with one of the three teeth described as *Coelurus gracilis* by Lull⁵, but the chief distinction between the tooth of *Coelurus gracilis* and that of *Orthogoniosaurus Matleyi* lies in the fact that the posterior edge of the former is concave, while that of the latter is straight.

In this connection attention may be drawn to a Theropod dinosaurian tooth originally described by Huxley⁶ as *Ankistrodon indicus* and subsequently changed into *Epicampodon indicus* by Lydekker⁷. Recently von Huene⁸ has expressed an opinion that *Epicampodon* is possibly the same as *Thecodontosaurus* and the Indian *Epicampodon indicus* is related to *Thecodontosaurus lindrodon*⁹. The Indian Triassic *Epicampodon* (= ? *Thecodontosaurus*) *indicus* may be regarded as a very close ally of *Orthogoniosaurus Matleyi*, the relationship resting chiefly on the occurrence of the dental serrations which are found only on the posterior border which is also straight in both cases. The serrations of *Orthogoniosaurus Matleyi* are rather blunt and at right angles to the axis of the tooth and, in these respects, there is a great similarity between my species and *Thecodontosaurus cylindrodon* described as *Palaeosaurus cylindricum* by Huxley and Stutchbury¹⁰, as *Palaeosaurus cylindrodon* by Huxley¹¹

¹ *op. cit.*, p. 154. ² *Rec. Geol. Surv. Ind.*, Vol. 55, pp. 105-109, 1924.

³ *Rec. Geol. Surv. Ind.*, Vol. 10, p. 41, 1877, and *Pal. Ind. Ser.*, IV, I, pt. 3, pp. 26-27, 1879.

⁴ *Bull.* 110, U. S. Nat. Mus., p. 92, 1920.

⁵ *Maryland Geol. Surv.*, Lower Cretaceous, pp. 187-188, pl. XV, fig. 1,

Gilmore (*op. cit.*, p. 127) is of opinion that this identification has been made on very scanty evidence and is of doubtful value.

⁶ *Pal. Ind. Ser.*, IV, Vol. I, pt. 1, pp. 11-13, 1865.

⁷ *Cat. Fossil Reptilia and Amphibia in the British Mus.*, Pt. 1, p. 174,

⁸ *Geol. u. Pal. Abhandl.*, Bd. XII, p. 5, 1906.

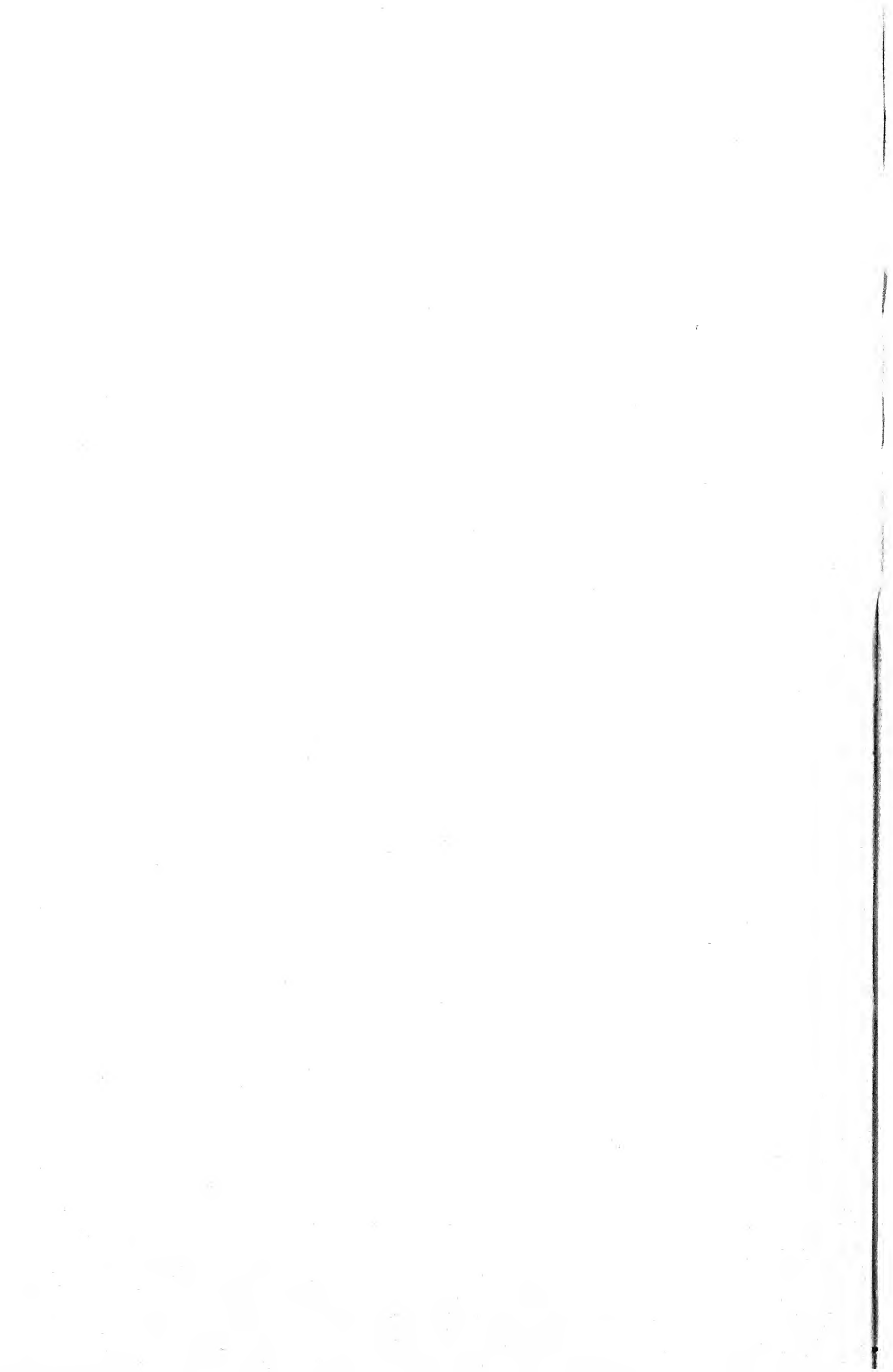
⁹ *Geol. u. Pal. Abhandl. Suppl. Bd. I*, Lief. 5, p. 302, 1908.

¹⁰ *Proc. Geol. Soc. Lond.*, Vol. II, pp. 397-393, 1836.

¹¹ *Q.J.G.S.*, Vol. XXVI, pp. 43-44, 1870.

and linked up with *Thecodontosaurus* by von Huene¹. I would accordingly like to place the genus *Orthogoniosaurus* under the family of *Anchisauridae* (*Thecodontosauridae*).

¹ *Geol. u. Pal. Abhandl.*, Vol. XVII, p. 81, 1914.



Some Meteorological Proverbs of the People of Bengal

By CHINTAHARAN CHAKRAVARTI

In a paper entitled '*Meteorology in Ancient India*'¹ MM. Dr. Ganganath Jha has shown that meteorology as a science was cultivated in ancient India. He drew the attention of scholars to the fact that there were a good many works in Sanskrit which dealt with the subject either exclusively or incidentally (as in astronomical works). He brought together in his paper the meteorological information that was scattered in as early a work as the well-known astronomical work, the *Brhatsamhitā* of Varāhā-mihira (5th-6th century) traditionally associated with the court of Vikramāditya as a contemporary of the great poet Kālidāsa.

Stray sayings can, of course, be gathered from still earlier works. Thus the grammatical work, the *Mahābhāṣya* of Patañjali (3rd century B.C.) has a couplet—it may possibly be a quotation—which refers to the climatic effect produced by lightning assuming different colours. It runs:—

वाताय कपिला विद्युदातपायातिबोहिनौ ।

ऊष्णा सर्वविनाशाय दुर्भिच्छाय सिता भवेत् ॥²

"Lightning having a brown colour indicates storm, that having a deep red colour forecasts sunshine. Lightning with a black colour forebodes total destruction, while white-coloured lightning gives an indication of famine."

The *Kāśikā*, commentary on the grammar of Pāṇini, reads पीता वर्षाय विज्ञेया³ as the third foot and this means 'yellow-coloured lightning should be taken as an indication of rains'.

There is also a Sanskrit proverb, according to which 'clouds in the west are not fruitless'.⁴

Meteorological beliefs in the form of popular sayings and proverbs—in some cases at least going back to a fairly old age—are also known to be prevalent in the various Indian vernaculars. A collection of these will be of some importance to the

¹ Allahabad University Studies—Vol. I (Allahabad, 1925)—pp. 1-11.

² *Mahābhāṣya*—Benares, Rajrajeswari Press ed., p. 186 (vol. II);

Kielhorn—p. 449 (vol. I). The latter reads the third foot as पीता भवति सस्याय (yellow lightning indicates crops).

³ Under Pāṇini II. 3. 13.

⁴ अमोघाः पश्चिमे मेघाः ।

evening is supposed to give a forecast of the weather of the next day. The proverb runs:—

भङ्गार सुखे खड़ा

खड़ा सुखे भङ्गा ।

‘If the red evening follows a stormy day, there will be dryness (*i.e.*, cessation of rains); if it follows a dry (rainless) day, there will be storm.’

3. Clouds in the south are regarded as sure indications of rain in the months of Āṣāḍha and Śrāvaṇa (July-August); those in the north are believed to be similar indications of rain in the months of Caitra and Vaiśākha (May-June). North-western quarter is popularly called the stormy quarter and clouds in that quarter are supposed to bring about storm.

4. It is believed, in some parts of Eastern Bengal, that the weather condition of the month of Pauṣa (December-January) gives a forecast of the weather of the following year. The saying goes:—

आदि अन्ते निज मास

मीन हैते तुला ।

मकर कुम्भ विच्छा दिया

मास खाटाइया गेला ॥ ¹

‘You (*i.e.*, the month of Pauṣa) pass away forecasting the weather conditions of the year: in the beginning ($1\frac{1}{4}$ days) and the end ($1\frac{1}{4}$ days) you give a forecast of your own (*i.e.*, the month of Pauṣa) [in the following year] and then [by every two days and a half] you give an indication of the weather conditions of the months beginning from Mīna (the sign of Pisces, *i.e.*, the month of Caitra) and ending with Tūlā (Libra—month of Kārtika) and then you forecast the months of Makara (Capricorn—month of Māgha), Kumbha (Aquarius—month of Phālguna) and Vicchā (Scorpio—month of Agrahāyana).

5. ज्यैष्ठेर कुड़ि भड़ हय बुझौ ।

‘Twentieth of Jyaiṣṭha and the storm becomes old, *i.e.*, loses its ferocity after the 20th of Jyaiṣṭha (May-June).’²

¹ Though highly popular it has undergone material changes from mouth to mouth and it is difficult to trace the original.

² But, as a matter of fact, storms in the months of Āśvina and Kārtika (September and October) are the most furious.

Sayings of Khanā.¹

6. पौषे गरमि वैशाखि जाड़ा ।
 प्रथम आषाढ़े भरवे गाड़ा ॥
 खना बले शुन हे खामी ।
 आवण भादर नाइको पानि ॥

‘If the month of Pausa (December-January) is hot and there is cold in the month of Vaiśākha (April-May), pits will be filled in the beginning of Āṣāḍha (June-July) [*i.e.*, there will be heavy rain].’ ‘Listen, O my husband’, says Khanā, ‘there will be no water (*i.e.*, rain) [in that year] in the months of Śrāvaṇa and Bhādra (July-August).’

7. चैत्रेते घर घर ।
 वैशाखे भड़पायर ॥
 ज्यैष्ठेते तारा फुटे ।
 तवे जान्वे बर्षा बटे ॥

‘If there is shivering cold in the month of Caitra (March-April), hail and storm in the month of Vaiśākha (April-May), and stars become visible in the month of Jyaiṣṭha (May-June), know it [to be a year of] heavy rain.’

8. पौषेर कुया वैशाखेर फल ।
 य दिन कुया त दिन जल ॥

‘If there is fog in the month of Pausa (December-January) the effect of it will be [noticed] in the month of Vaiśākha (April-May). There will be rain for so many days as there was fog.’

9. शनिर सात मङ्गलेर तिन ।
 आर सब दिन दिन ॥

‘If the rain begins on Saturday it will last for a week, if on Tuesday, for three days, and in the case of other days it will last only for a day.’

10. बत्सरेर प्रथमे ईशाने बाय ।
 से बत्सर बर्षा खनाय कय ॥

¹ The sayings in the present paper are taken from *Khanār Vacan*, with Bengali explanation, published by P. S. Bhattacharya (Srinath Library, 28/1, Beadon Row, Calcutta—1315 B.S.).

‘If in the beginning of the year (*i.e.*, in the month of Vaisākha) wind blows in the North-east corner, there will be [heavy] rain that year—so says Khanā.’

11. भादुरे मेघे बिपरीत बाय ।
से दिने भड़दृष्टि हय ॥

‘If wind blows in the direction opposite to that of the cloud in the month of Bhādra (August-September), there will be rain and storm on that day.’

12. कि कर श्वशुर लेखा जोखा ।
मेघेइ बुझवे जलेर लेखा ॥
कोदाले कुड़ले मेघेर गा ।
मध्ये मध्ये दिच्छे बा ॥
खकके बलगे बाँधते आल ।
आज ना हय हवे काल ॥

‘What calculations do you make, O father-in-law ? You will get indications of rain from clouds themselves. If clouds are of the spade-axe appearance¹ and there is occasional wind, you will ask the farmer to fix the ridge of earth dividing fields ; for there will be [rain] to-morrow if not to-day.’

13. ब्याङ् डाले घन घन
दृष्टि हवे शीघ्र जान ।

‘If frogs croak frequently, know it, there will be rain in no time.’ (Cf. *Rgveda* VII, 103.)

14. पूवेते उठिलःभड़
डाङ्गा डोबा एकाकार ।

‘If the rain-bow is seen in the east, land and pond will become the same (*i.e.*, there will be excessive rain).’

15. पश्चिमेर घनु नित्य खरा ।
पूवेर घनु बर्षे भर्रा ॥²

¹ Pieces of cloud scattered in the sky are said to be of the spade-axe type.

² Another reading is कड़ा.

‘If a rain-bow is seen in the west there will be eternal dryness, (*i.e.*, drought); if in the east there will be torrential or heavy rain.’

16. चाँदेर सभार मध्ये तारा ।
बर्षे पानि सुषलधारा ॥

‘If there are stars within the halo of the moon, rain showers in torrents.’

17. दूर सभा निकट जल ।
निकट सभा रसातल ॥

‘If the halo be at a distance from the moon, rain is imminent; if it is close to her there will be destruction (*i.e.*, on account of drought).’

18. बामुन बादल बान ।
दक्षिणे पेलेइ यान ॥

‘Brahmin, shower, and flood go away as soon as they get *dakṣiṇā*, *i.e.*, the first goes away as soon as he gets the sacrificial fee and the last two subside as the southern wind blows.’

19. पूर्ण आषाढ़े दक्षिणा बय ।
सेइ बत्सर बन्या हय ॥

‘If southern wind blows in the middle of Āṣāḍha (June-July) there will be flood that year.’

20. आमे धान ।
तेतुले बान ॥

“If mangoes grow abundantly there will be much paddy; if there is a luxuriant growth of tamarind there will be flood.”

Literally “paddy to mangoes; floods to tamarinds.”


There are also various proverbs dealing with the effect of weather—specially its bearing on the agricultural products of the land. Some of these attributed to Khanā have been quoted by Dr. D. C. Sen in his *History of Bengali Language and Literature*¹ (pp. 20 ff.). I should conclude this paper with a reference to two sayings of Eastern Bengal pertaining to the effect of rain on the growth of fish and the climatic condition of

¹ Published by the Calcutta University.

the land. It is believed that rain on the last day of the month of Āśvina (September-October) has the effect of turning fish into snails. It is also said 'less rain double cold'.¹

P.S.—Similar proverbs of Assam attributed to one Dāka who is supposed to have been a native of Lehi-dangara village in Barpeta have been given in *Asamīya Sāhityar Cānekī* or *Typical Selections from Assamese Literature* (University of Calcutta, 1929, Vol. I, pp. 128-133).

¹ জনা দৃষ্টি দুনা শীত ।



The Cult of Bāro Bhāiyā of Eastern Bengal

(*A form of Demon-worship.*)

By CHINTAHARAN CHAKRAVARTI

The study of the religious rites of the village folk of different parts of India is often very interesting. There are many such rites of which no trace is found in any scriptural text. But in spite of this they are respected as much as, and, sometimes even more than those that are specifically prescribed by the scriptures. They are highly popular among the rustic people, and even in higher society, especially among the women-folk. In most cases, however, these rites have been given right scriptural forms, *i.e.*, the details of scriptural worship are strictly observed in them and the *mantras* chanted are in Sanskrit, sometimes, though rarely, interwoven with *mantras* in vernaculars. One notable peculiarity of these rites is their local importance and extremely limited spread. A rite is performed in one or two adjacent districts, other parts knowing nothing about it.

Some of these rites are undoubtedly ancient and retain palpable traces of primitive religion; though there are some which seem to have originated in a comparatively later period. On the whole their importance to students of Anthropology is considerable.

With the progress of modern civilisation most of these rites are fast falling into disuse and unless carefully prepared records of them are kept in time, they will soon be totally forgotten.

No comprehensive work in this line has as yet been undertaken. In Bengal descriptions of various rites of different districts are from time to time published in the vernacular periodicals and a few separate publications dealing with these matters are also known. But very few of them have been worked out in a real scientific spirit. And little has as yet been done in English to popularise these among the world of scholars. Several stray articles are all that have so far been presented to scholars through various Oriental and Anthropological Journals, a bibliography of which is under preparation by the present author.

In the present paper I am going to describe a peculiar cult that is prevalent in some districts of Eastern Bengal. My description is primarily based on my own observations in my native place at Kotālpādā in the district of Faridpur. In other

places also similar rites are known to be performed. It may be styled the cult of Bāro Bhāiyā or Twelve Brothers, as the twelve brothers along with their mother (Vana-durgā) and sister (Rana-yakṣiṇī) are the chief objects of worship in it. It is popularly called the cult of Vanadurgā (the mother of the 12 brothers) or Nisānātha, Nisā, or Nisāi (one of the 12 brothers). It should be pointed out here that these brothers are described as demons (*daityas*) and their mother as 'the mother of demons' (*dānava-mātā*). They are all represented as being dreadful in appearance. As a matter of fact their demoniac character is abundantly made clear by their physical features as described in their *dhyaṇas*. They are all evil spirits as the names of some clearly indicate and as it is generally supposed that any displeasure or wrath on their part brings about diseases or other calamities. Of the names of these gods *gābhūra-ḍalana* means the oppressor (*ḍalana*) of the young ones (*gābhūra*);¹ *mocrā-simha* means 'the great one who strangles to death'; *niśā-nūtha* means 'the lord of the night.' They are said to be always on the alert so that they cannot tolerate any disrespect on the part of the people who are therefore greatly afraid of them and are very particular in offering worship to them. One of these deities, e.g., *vanadurgā*, has been described as a tree-goddess from the fact of her worship being offered under a tree and her having no separate image (S. C. Mitra in 'Man in India', 1922, p. 228).

There is no fixed time for the worship of these deities. The worship is generally performed at day-time on Tuesdays and Saturdays (which days of the week are generally regarded as specially auspicious for Tantra worship), and specially on the occasion of prevalence of diseases in a family, to appease the wrath of the deities which is supposed to have brought them about. No images of these gods are generally known to be made. The image of one of these brothers, e.g., Hari-Pāgala (lit. Mad Hari) is however to be found in a house at the village of Unāśiā in Koṭālipādā.

The worship is performed at Kotālipādā at the base of a big Aśvattha tree² in the aforesaid village of Unāśiā, the place being known as Nisāi-kholā or the place of worship of Nisāi. There is no provision for any daily worship here as in temples.

Nothing can be said as regards the antiquity of this worship. But this much is certain that the names of some of these deities bear undeniable traces of vernacular influence (cf. *Gābhūra-ḍalana*, *Mocrā-Simha*, *Hari-Pāgala*) drawing our attention to the probability that the cult might have been prevalent

¹ I am indebted to my former teacher, Dr. S. K. Chatterji, for this interpretation.

² At other places the worship is performed under a *sheorā* tree or under a branch of that tree placed on the floor of a room.

originally among the unlettered mass, not unlikely outside the fold of Aryanism.

The process followed in the worship agrees fully with that laid down in the scriptures with regard to worship in general (e.g., सङ्कल्प, घटस्थापन, गणेशादिनामादेवतापूजा, ध्यान, पूजा, बलि, etc.). Goats, buffaloes, and sheep are sacrificed for propitiating the deities. But the heads of the sacrificed animals are not taken back and are left in a hollow in the tree. It is probably for this reason that when promising sacrifices to these deities people are found to say, "We will present to you HALF a goat if my son is cured," etc. etc.

Mantras used in the worship are all in Sanskrit. In the manner of tantra worship monosyllabic *vijamantras* are associated with each of the deities. Several *mantras* in Bengali, as quoted below, are also chanted when offering the animals to the gods.

रक्तमुखी योगिनी रक्ततुण्डी मुद्ग काग द्विण्डोम्

हे चण्डि¹ तुद्ग रुधिर खा कालिकार आच्चा ।

Red-mouthed, red-faced, terrible witch, I shall sacrifice the goat. You take the blood—this is the order of (the goddess) Kālī.

त्रिनयन दशबाहु शरत्काली देवी चण्डि कालिका मा

मुद्ग काग द्विण्डोम् तुद्ग रुधिर खा कालिकार आच्चा ।

O mother Kālī, the terrible goddess, the Kālī of autumn with three eyes and ten arms, I shall, etc., as above.

असुरसंहारिणी त्रिदशेश्वरी सिंहवाहिनी चण्डि कालिका मा

मुद्ग काग द्विण्डोम् तुद्ग रुधिर खा कालिकार आच्चा ।

O mother Kālī, the terrible goddess, riding on a lion, the queen of the gods, the destroyer of the demons, I shall, etc., as above.

In some places the worship is performed by the lower class people alone, who sing, dance, and make merry. I have obtained two songs of these people from Dr. Surendra Nath Sen, M.A., Ph.D., of the Calcutta University, collected by him from his native district of Barisal. They run thus:—

“ओ मा हडकडालि लो

बारो द्वाब्ता² लैया मा तुद्ग

खेइरे ओला लो ”

¹ Here the name of the particular deity to whom the offering is to be made is mentioned and the direction is thus given in Sanskrit in the MS. :—यस्यै देवतायै बलिर्देयः हे चण्डि इत्यत्र सम्बोधनान्ततदेवतानाम् प्रयोक्तव्यमिति विशेषः ।

² In the place of बारो द्वाब्ता (twelve deities) the name of the particular deity is also mentioned.

“O Mother, come down to play with the 12 deities.”

“खर्गेर हाड़िया हाड़िया हाड़िया रे

मञ्चे लामिया फुल भरा दे

खोला चाइइहा दे”

“O sweeper of heaven, come down and shower flowers. Make the place of worship clear.”

Leaving out of account these few lines in Bengali it will be seen how carefully the whole worship has been made to conform to the Tantra form. Most of the deities have been given Śivaite attributes and implements. Of the weapons and implements mentioned, matted hair (I, XII), the trident (IV, VII, IX), tiger's skin (XII, XIV), snake (I), axe (V), club (II, VII, VIII, XI-XIV), skull (I, IX) are all Śivaite. This points to the immense popularity attained by the Tantra form of worship. It shows how village cults were affiliated to Tantricism. We have here clear evidence of how a popular cult current possibly among people beyond the pale of Aryandom and thus having nothing to do with Sanskrit was later affiliated to Aryan culture. The first and most indispensable step for that purpose was this Sanskrit garb and the assimilation with the usual form of worship. Even from behind that garb the original state of things peeps through the vernacular names and *mantras*. This kind of borrowing or assimilation is not a rare or unknown fact in the chequered history of Hinduism. We shall not be surprised if later investigation traces this cult or its precursor to Pre-Aryan times.

The *dhyānas* give anthropomorphic details of the deities though no images are made. They are given below with English translations, for the purpose of drawing attention to the nature of the deities.

I. VANADURGĀ¹ (The Wild Durgā).

देवीं दानवमातरं निजमदाघूर्णन्महाशोचनाम्

दंष्ट्राभीममुखीं जटालिविलसन्मौलिं कपालस्रजम् ।

वन्दे लोकभयङ्करौ घनरुचिं नागेन्द्रहारोज्ज्वलाम्

सर्पाबद्धनितम्बविम्बविपुलां बाणान् धनुर्बिभ्रतीम् ॥

¹ The worship of Vanadurgā is described in a slightly different form by Mr. S. C. Mitra in *Man in India* (1922), pp. 228-41. But he does not refer to the anthropomorphic details of the goddess. Neither does he refer to the 12 brothers.

I bow to the Goddess, the mother of the demons, with big eyes whirling on account of her own intoxication, a face dreadful on account of the teeth, a head looking smart on account of tufts of matted hair, a garland of skulls,—fearful to the people, cloud-coloured, bright on account of a necklace of big snakes, huge with anklets covered with snakes, holding arrows and a bow.

II. KRṢṢA-KUMĀRA (The Black Youth).

वृषावणं महाकायं खड्गखट्वाङ्ग¹धारिणम् ।

श्वेताश्ववाहनं दैत्यं रक्तमाल्यानुलेपनम् ॥

Various forms of a goddess of this name are mentioned. An eight-handed Vana-durgā is described by Gopinath Rao in his *Elements of Hindu Iconography* (Vol. I, Pt. I, p. 343). A sixteen-handed deity of the same name surrounded by young maidens is referred to in the Tantra compilation *Īśāna-śivagurudeva-paddhati* (Trivandrum Sanskrit Series, Pt. II, pp. 102-8). Three aspects of the deity seem to be represented by the four dhyānas that are given there. She should be worshipped in one or other of the aspects according as the worshipper aims at gaining (1) victory or protection, (2) wealth or Kingship, or (3) the destruction of enemies. Her third aspect is thus described in two dhyānas. It will be noticed that in this aspect she shows a resemblance to our 'demon-mother'.

शङ्खं चक्रं धनुः कपालमुसले मुष्टिं गदामङ्कुशं

चक्रं खड्गशरौ त्रिशूलकुलिशप्रामात्रिपाशान् भुजैः ।

त्र्यक्षां तां दधतीं स्मरेद्वननिभां व्याघ्राजिनात्ताम्वरां

सिंहस्यामहिभूषणां रिपुवधे शार्दूलविक्रीडिताम् ॥

One should meditate on that three-eyed, cloud-like deity who carries in her hands the conch, disc, bow, skull, mace, fist, club, hook, sword, arrow, trident, bolt, barbed dart, fiery noose—who has taken up tiger's skin as her cloth, who stands on a lion, has the snake as her ornament, and who plays (*i.e.*, moves) like a tiger on the occasion of killing enemies. [It will be noticed that the metre of this verse is technically called in metrology *śārdūla-vikrīḍita*.]

सिंहस्यां कथितास्त्रषोडशभुजां विद्युत्प्रभाभूषणां

रक्ताकल्पभुजङ्गहारवलयान् व्यक्षां कुमारीगणैः ।

सन्नद्धां विविधायुधैः परिहृतां दुर्गां तथा मातृभि-

र्याथैत् तां कुपितां महासुरवधे शस्त्रास्त्रधारामुचम् ॥

One should meditate on that three-eyed Durgā surrounded by the maidens and the mothers equipped with various weapons, riding on a lion, having sixteen hands (adorned with) the weapons mentioned above, terrible and bright like lightning, having red ornament and necklaces and bracelets of snakes, who is angry and drops showers of weapons on the occasion of killing great demons.

¹ 'A club shaped like the foot of a bed-stead, *i.e.*, a club or staff with a skull at the top (considered as the weapon of Śiva and carried by ascetics and yogins)'—M. Williams. According to T. Gopinath Rao it

स्मेरास्यं सुन्दरं शुभ्रं पिङ्गाक्षं पिङ्गकेशकम् ।

वन्दे कृष्णकुमारञ्च भयदं पीतवाससम् ॥

I bow to Kṛṣṇa-kumāra, a demon black in colour, big in body, terrific, beautiful and white,¹ holding a sword and a club, having a white horse as his carrier, a red garland and red ointment, a smiling face, tawny eyes, tawny hair, yellow cloth.

III. PUṢPA-KUMĀRA (The Flower Youth).

पुष्पहस्तं महाकायं पुष्पचापधरं² परम् ।

पुष्पमाल्यधरं कान्तं दिव्यगन्धानुलेपनम् ॥

तप्तकाञ्चनवर्णाभिं वन्दे पुष्पकुमारकम् ।

रक्ताश्ववाहनं क्रूरं रक्तास्यं रक्तवाससम् ॥

I bow to Puṣpa-kumāra—the supreme, handsome, cruel, big in body, with flowers in hand—holding a bow and a garland of flowers, besmeared with celestial perfume, having the splendour of the colour of heated gold, red-faced, red-clothed, and having red horses as carriers.

IV. RŪPA-KUMĀRA (The Beautiful Youth).

वन्दे काञ्चनवर्णाभिं द्विसुजं शूलहस्तकम् ।

सुन्दरात् सुन्दरं शान्तं नानापुष्पविहारिणम् ॥

रत्ननेत्रं रक्तवस्त्रं रक्तमाल्यानुलेपनम् ।

एवं ध्यात्वा यजेद्भौमान् दैत्यं रूपकुमारकम् ॥

I bow to the God with two hands, having the splendour of the colour of gold, with a trident in the hand, more beautiful than the beautiful one—the peaceful one who roams among various flowers, red-eyed, red-clothed, red-garlanded, and besmeared with red ointment. A wise man should worship the demon Rūpa-kumāra meditating on him in this way.

is 'a curious sort of club, made up of the bone of the fore-arm or the leg to the end of which a human skull is attached through its foramen' (*Elements of Hindu Iconography*, Vol. I, Pt. 1, p. 7). Waddell in his *Buddhism of Tibet* (London—1895) translates it as pike and he gives a picture of it (p. 340-1).

¹ It is curious that the deity is described here in the same breath as 'black' and 'white'. But such contradictory statements are not rare in the descriptions of these deities (cf. 'handsome' and 'terrible' in II, 'mad' and 'beautiful' in V). Repetitions of one or similar attributes, with respect to the same deity, are also met with. As a matter of fact, these descriptions show various defects of composition, not excepting grammatical and metrical inaccuracies which may not unlikely be due to the author's desire to give them an antiquated, epic appearance.

² क्रूरं is another reading.

V. HARI-PĀGALA (Hari the Mad).

उन्मत्तवेष्टं करपङ्कजाभ्यां

धृतं लगुडं¹ परशुं सपाशम् ।

आघूर्णितं निजमदैः स्खलितं² सुकान्तं

यजेन्महान्तं हरिपागलाख्यम् ॥

One should worship the great Hari-Pāgala who is very beautiful, whose dress is that of one mad, who holds a club, an axe, and a noose with his lotus-like hands, who whirls and slips on account of his own intoxication.

VI. MADHU-BHĀNGARA (The Breaker of the Honey-comb [?]).

रक्तास्यनेत्रं पिशुनस्वभावं

सदा यजन्तं³ परिपूर्णवक्त्रम् ।

आघूर्णितं निजमदैः स्खलितप्रसादं⁴

ध्यायेत् सुदैव्यं मधुभाङ्गराख्यम् ॥

One should meditate on the good demon, Madhu-Bhāngara by name—red-faced and red-eyed—who is insincere in behaviour, who is always worshipping, who has a full face, who whirls and whose feet slip on account of his own intoxication.

VII. RŪPA-MĀLIN (The Beautiful).

रुक्ममाल्यधरं श्वेतं रुक्मवस्त्रं चतुर्भुजम् ।

शूलवच्चशरांश्चापधारिणं⁵ सुमनोहरम् ॥

वृष्णाश्ववाहनं कान्तं कुमारं रूपमालिनम् ।

दीर्घहस्तं दीर्घकायं पाशखट्वाङ्गधारिणम् ॥

(Bow to) the youthful Rūpa-mālin—the white, the beautiful, and highly attractive—who has four hands, who carries a garland of gold, has a golden cloth, who holds a trident, bolt, arrows, a bow, a noose, and a club, who has a black horse as his carrier, and who is tall in body and has long arms.

¹ Correct metre would require a long ū instead of a short one.

² मदस्खलित—is another reading.

³ जयन्ती—is another reading.

⁴ निजमदस्खलितप्रसादं—is another reading.

⁵ According to rules of grammar no syntactical connection is possible between—शरान् and चापधारिणम् ।

VIII. GĀBHŪRA-DALANA (The Oppressor of the Young Ones).

दीर्घहस्तं दीर्घकायं पाशखट्वाङ्गधारिणम् ।
 वृषावर्णं रक्तनेत्रं लम्बकर्णं वृषोदरम् ॥
 रक्तवस्त्रधरं क्रूरं रक्तगन्धानुलेपनम् ।
 गाम्भूरडलनं वन्दे सर्वलोकभयङ्करम् ॥

I bow to Gābhūra-dalana—cruel, terrific to the whole world, black-coloured, red-eyed, short-bellied—having big hands, a large body, and hanging ears, holding a noose and a club, wearing a red cloth and anointed with red sandal paste.

IX. MOCRĀ-SIMHA (The great one who strangles to death).

रक्ताङ्गनेत्रो भयदो जनानां
 शूलं कपालं¹ करपङ्कजेन ।
 रक्तास्यहस्तः पिशुनस्वभावः
 सदा जडो² भीममुखो विभाति ॥

There shines he with a dreadful face, red body and red eyes, red face and red hands—always dull, terrific to the people, cruel-behaviour, and (holding) a trident and the skull with the lotus-like hand.

X. NISĀ-NĀTHA³ (The Lord of the Night).

वृषावर्णं रक्तनेत्रं निशाचौरं भयानकम् ।
 शक्तिहस्तं दीर्घजङ्घं विकटास्यं दिगम्बरम् ॥
 करालवदनं घोरं⁴ शुक्लदेहं वृषोदरम् ।
 ध्यायेत् सदाक्रोधयुतं वण्टावर्धरवादिनम् ॥
 रात्रौ चारमसिचर्मधरं दिशतमस्तकम् ॥

One should meditate on Nisā-Caura—the terrible, the naked, black-coloured, red-eyed, ever angry—having a Śakti

¹ सपाशं is another reading. ² सदाज्वरौ is another reading.

³ He is the principal deity of the group. It is not quite clear as to how he came to be styled Nisā-Caura (thief of the night). Popularly he is called Nisānātha, or simply Nisā or Nisāi. The dhyāna refers to him as *rātrau cāra* or night-rover and there is no implication anywhere to his stealing habit. The correct form, therefore, seems to have originally been *Nisā-cāra* which the scribe inadvertently might have changed to *Nisā-caura*.

⁴ Another reading is भीमं ।

(weapon) in the hand, with tall thighs and terrific face, emaciated body and short belly—one who makes a rattling sound of bells, roves at night, has two hundred heads, and holds a sword and skin.

XI. SŪCI-MUKHA (The Needle-faced).

दीर्घास्यनेत्रः पिशुनस्वभावः

सदा कृशाङ्गो भयदो जनानाम् ।

सूच्यग्रवक्त्रो ¹ विरसः प्रमादी

खट्वाङ्गहस्तो विभुजो बभासे ² ॥

He shone—he who has a long face and big eyes, an ever-emaciated body, a deceitful behaviour, a face like the point of a needle,—he who is terrific to the people, is careless, sorrowful, and has his face turned away.

XII. MAHĀ-MALLIKA (The Great Goose [?]).

विशालनेत्रः परिपूर्णवक्त्रो रक्तैः समांसैर्भयदो जनानाम् ।

करालदंष्ट्रः कमलासनस्थः कदम्बमाली कुटिलः कृशाङ्गः ॥

श्रीमन्महामल्लिक एष भाति गोमायुरावौ ³ दिभुजो जटौघः ।

खट्वाङ्गधारौ नृकपालमाली शार्ङ्गलचर्मामृतसर्वगात्रः ॥

Here shines the handsome Mahāmallika—crooked and terrific to the people on account of blood and flesh—with large eyes, a full face, high, projecting teeth, emaciated body, two hands, a tuft of matted hair,—seated on a seat of lotuses—having garlands of skulls and *kadamba* flowers, covered all over the body with the skin of the tiger, holding the club, and making sounds like jackals.

XIII. BĀLI-BHADRA (Bāli the Good).

कृशाङ्गवक्त्रः स्फटिकाङ्गयष्टिः

सक्रोधनेत्रः कपिलाक्षकेशः ।

खट्वाङ्गहस्तः खरगृध्रधारौ ⁴

स बालिभद्रः पशुहिंसकायः ⁵ ॥

¹ सुरक्तवक्त्रो is another reading.

² विभाषे is another reading.

³ गोमायुवाशौ is another reading.

⁴ —रावौ is another reading. ⁵ सिंहकायः is another reading.

He, the Bāli-bhadra, is emaciated in body and face, has a crystal slim body, angry eyes, tawny eyes and hair, carries the crow and the vulture, has a club in his hand, and has a murderous appearance like that of a beast.

XIV. RAṆA-YAKṢINĪ (The Yakṣinī of the Battle-field).

दौर्घाङ्गी दौर्घनेत्रा गुरुकुचयुगला घोरदंष्ट्रा कराला

रक्ताक्षी रक्तवर्णा¹ रुधिरचषकहस्ता मुण्डमालावृताङ्गी² ।

घण्टाखट्वाङ्गपाशान्³ करयुगविधृता दौपिचर्मोपिनद्धा

निव्यं मांसास्थिभक्षा रणभुवनगता यक्षिणी दौर्घवक्त्रा ॥

Yakṣinī, the dreadful, has a tall body, long face, large eyes, a pair of heaving breasts, terrible teeth, red eyes, a red colour, a cup of blood in the hand, holds the bell, the club, and the noose in her two hands—is covered by a garland of skulls, is clothed in the skin of the leopard, always feeds upon flesh and bones, and stays in the field of battle.⁴

¹ कृष्णवर्णा is another reading. ² — वृताङ्गी is another reading.

³ पाश is another reading. We have here a very loose syntactical connection.

⁴ These *dhyānas* and other details of worship are taken from a manuscript belonging to and kindly lent by Pandit Govinda Chandra Vyākaraṇatīrtha. I had also the privilege of comparing two printed books on rituals, containing the details of the worship, published by the Sanskrit Book Depot and Sāraswata Pustakālaya of Calcutta. These latter books, however, do not refer to the Bengali mantras.

An Ancient Indian Story in a Bengali Vratākathā

By NILMANI CHAKRAVARTTI

Various rites and observances are current in Bengal. They are generally practised by the female section of the population. They may be classified under two heads, viz., (1) those performed by the maidens, and (2) those performed by married women including the widows. The second class may be further divided into two sub-classes, viz., (1) the observances, the origin of which can be traced in some of the *Purāṇas*, notably in the *Bhaviṣya* and the *Skanda purāṇa*, and (2) those the origin of which cannot be so traced.

The observances of the maidens do not require any detailed worship. The worship is performed by the maidens themselves and the *Mantras* are in Bengali verses, in which prayer for a good husband, prosperity of the father and brother, deprecations upon a co-wife, etc., are often present. No history of the origin of the observances has been handed down in the form of *Kathās* or stories. The second class of observances is often accompanied by a *Kathā* or story of the origin of that observance. The stories of the Pauranic observances are in Sanskrit, and those of the others are in Bengali. These stories are told by the mistress of the house. After the worship is duly performed by the priest the mistress of the house calls together all the female members who all remain fasting to listen to the *Kathā*. After listening to that and saluting before the deity, who is mostly a goddess, and praying for prosperity, they break their fast. During the whole day they generally take one meal only and abstain from fish or meat.

Many of the stories are now becoming obsolete with the passing away of old Hindu matrons. It is a fortunate thing that some of these stories have been collected and published. The most important publications on this subject are:—

- (1) That published by the Bangiya Sāhitya-pariṣat and
- (2) that published by late Babu Ashutosh Mukherjee.

It is not possible to say from what time these observances have become current, some of them at least are very old; e.g., Lakṣmīpūjā or the worship of Lakṣmi, the goddess of luck. In the Veda we find the *Śrīsūkta*. In the early Buddhist literature we find mention of *Siri*, and on the railings of the Bharhut stūpa we find a representation of the

goddess. In Bengal this deity is worshipped in every Hindu household. Unlike other deities she is worshipped several times in the year, *viz.*, on the full-moon day of *Āśvina* (September-October), on the new-moon day of *Kārttika* (October-November), and during the bright fortnight of the months *Bhādra* (August-September), *Pauṣa* (December-January), and *Caitra* (March-April). On each occasion a separate story is told. It should be stated here that these stories are not always the same throughout Bengal. Considerable variations are to be found among the stories current in the East and the West Bengal. For the present paper we are concerned with the story relating to the Kojāgarī Lakṣmīpūjā which takes place in the night of the full-moon day of *Āśvina*. The story is to be found in the *Vratākathā* published by the late Babu Ashutosh Mukherjee.

The story runs thus:—In a certain country there was a king. He started a market and declared that he would purchase every thing that would remain unsold in the market. One day a man brought an image of Alakṣmī (Ill-luck). No one would purchase that. The king, true to his promise, purchased and brought that home. As soon as he brought home the image, his Lakṣmī (goddess of fortune) took leave in spite of the king's earnest entreaties. At the time of departure, however, the goddess granted him a boon which enabled the king to understand the language of all beings even of the ants and flies. With the departure of the goddess the king's fortune began to dwindle. One day the king ordered not to mix ghee with any of his dishes, and his order was obeyed. Some ants used to come daily to the spot where the king used to take his meal. On that day they began to say amongst themselves that the king was impoverished; he could not have even ghee to eat. Listening to their conversation the king smiled. The queen, who was standing by, asked the king the reason of his smile. But the king said "I cannot tell it. If I tell you I shall have to die." But the queen would not listen to what the king said. She began to importune the king to reveal the secret to her. The king at last yielded and told the queen to accompany him to the bank of the Ganges, with a view to die on the bank of the sacred river. When the king went to the river bank a pair of goats were grazing there and a bundle of grass was being carried by the current. The she-goat told to the male one to bring the bundle of grass to her to eat. The he-goat said "I cannot perish in the water for your sake. I am not a fool like the king to come to die for the sake of wife." The king understood the conversation of the goats and having soundly thrashed the queen drove her into the jungles and returned to the palace. Later on, the queen performed the worship of Lakṣmī on the full-moon day of

Āśvina, in the forest, and the ill-luck of the king disappeared and the queen was restored to her former position.

In the earlier literature of our country we meet with two fables which are similar to the above story. In the collection of Pāli Jātaka stories there is a *Jātaka* named *Kharaputta jātaka* (Fausböl Jātaka, Vol. III, page 273) which is in many respects similar to the above story and in the 35th sarga of the Ayodhyakāṇḍa of the Valmiki Rāmāyaṇa there is a story which bears some resemblance to the above. The *Kharaputta jātaka* and the story from the Rāmāyaṇa are briefly given below.

The Kharaputta jātaka:—There was in Benares a king named Senaka, who had intimate friendship with a Nāga-king. Once the Nāga-king was angry with king Senaka owing to a misunderstanding on the part of the former. He, however, came to realise his own fault and came and apologised and gave a *Mantra* (a secret charm) to Senaka, by repeating which he could understand the voice of all beings. At the same time the Nāga-king told Senaka not to impart the knowledge of the charm to anyone else, otherwise he would have to emolate himself by burning in fire. One day the king was taking cakes with honey and molasses. At that time a drop of honey, a particle of molasses, and a crumb of cake fell on the ground. An ant seeing that began to run to and fro saying that in the hall of the king a jar of honey was broken and a cart of molasses and a cart of cakes had been upset. "Come one and all and enjoy honey, molasses, and cakes." Listening to that the king smiled. The queen, who was standing by, began to think "why the king smiled". When the king, after finishing his meal, sat on the couch, a fly said to his companion "come let us enjoy". Thereupon she said "wait a little, presently they will bring perfumes for the king and when the king will smear his body with them, I shall sit near his feet and get my body perfumed by the particles falling from his body and then sitting on the back of the king we shall enjoy". Hearing that the king smiled and the queen began to ponder on the cause of the king's smile. At night when the king sat to take his food a lump of rice fell on the floor and an ant seeing that began to run to and fro saying sorrowfully that a cart of rice was broken and there was none to take rice. Hearing that too the king smiled. The queen, who was standing by, serving the king thought "surely the king laughed seeing me". At night when they lay down on the same bed, the queen asked the king the reason of his smile. The king said "you need not know that". But the queen was obdurate and the king at last disclosed to her the cause of his smile. Thereupon the queen requested him to teach the charm. The king said "If I teach the charm to you I shall have to die". The queen said "give me the charm even if

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Āsvina, in the forest, and the ill-luck of the king disappeared and the queen was restored to her former position.

In the earlier literature of our country we meet with two fables which are similar to the above story. In the collection of Pāli Jātaka stories there is a *Jātaka* named *Kharaputta jātaka* (Fausböl Jātaka, Vol. III, page 273) which is in many respects similar to the above story and in the 35th sarga of the Ayodhyakāṇḍa of the Valmiki Rāmāyaṇa there is a story which bears some resemblance to the above. The *Kharaputta jātaka* and the story from the Rāmāyaṇa are briefly given below.

The Kharaputta jātaka:—There was in Benares a king named Senaka, who had intimate friendship with a Nāga-king. Once the Nāga-king was angry with king Senaka owing to a misunderstanding on the part of the former. He, however, came to realise his own fault and came and apologised and gave a *Mantra* (a secret charm) to Senaka, by repeating which he could understand the voice of all beings. At the same time the Nāga-king told Senaka not to impart the knowledge of the charm to anyone else, otherwise he would have to emulate himself by burning in fire. One day the king was taking cakes with honey and molasses. At that time a drop of honey, a particle of molasses, and a crumb of cake fell on the ground. An ant seeing that began to run to and fro saying that in the hall of the king a jar of honey was broken and a cart of molasses and a cart of cakes had been upset. "Come one and all and enjoy honey, molasses, and cakes." Listening to that the king smiled. The queen, who was standing by, began to think "why the king smiled". When the king, after finishing his meal, sat on the couch, a fly said to his companion "come let us enjoy". Thereupon she said "wait a little, presently they will bring perfumes for the king and when the king will smear his body with them, I shall sit near his feet and get my body perfumed by the particles falling from his body and then sitting on the back of the king we shall enjoy". Hearing that the king smiled and the queen began to ponder on the cause of the king's smile. At night when the king sat to take his food a lump of rice fell on the floor and an ant seeing that began to run to and fro saying sorrowfully that a cart of rice was broken and there was none to take rice. Hearing that too the king smiled. The queen, who was standing by, serving the king thought "surely the king laughed seeing me". At night when they lay down on the same bed, the queen asked the king the reason of his smile. The king said "you need not know that". But the queen was obdurate and the king at last disclosed to her the cause of his smile. Thereupon the queen requested him to teach the charm. The king said "If I teach the charm to you I shall have to die". The queen said "give me the charm even if

you die by giving it". The king was too much under the influence of the queen. So he consented and thought of emulating himself by entering into fire after imparting the knowledge of the charm to her and with this view he, riding a chariot, proceeded to the garden accompanied by the queen.

Sakka, the lord of the gods, having seen the affair, while surveying the world, thought "this foolish king is going to sacrifice himself to please his wife; I shall save him". Thinking thus he changed himself into a goat and transforming his wife into a she-goat came and appeared before the chariot. The king and the horses of the chariot could only see them. The goat (Sakka) in order to raise a conversation pretended to have sexual intercourse with the she-goat. Thereupon one of the horses said "we formerly heard that the goats are fools and shameless. Now what we see before us agrees with what we have heard". But the goat said "you are yourself a fool inasmuch as you are surrounded by rope, with your lips crooked and mouth bent. Another act of foolishness on your part is that being set free you would not flee and it is a greater act of foolishness on your part that you are carrying Senaka". Thereupon the horse said: "I admit that we are fools but why is Senaka a fool?" The goat said "He having got a valuable thing is going to give that to his wife and thereby he would sacrifice himself". The king hearing their conversation asked the goat "who he was". And when the goat declared himself to be *Sakka*, the king requested him to find out a way out of the difficulty. *Sakka* told the king to inflict some blows with the whip, as the preliminaries to the taking of the charm, and thereby she would not be willing to take it. Then the king went to the garden with the queen and asked her if she would learn the charm. On her answering in the affirmative, the king told her that she would have to observe the preliminaries. The queen enquired "what is that?" The king said "a hundred stripes will fall on your back but you will not be allowed to utter a cry". The queen consented. Thereupon the king ordered a servant to deal one hundred blows with a whip. The queen having endured two or three blows cried out saying that she did not require the charm.

The story in the *Rāmāyaṇa* runs thus:—When Kaikeyi insisted on banishing Rāma for fourteen years and installing Bharata on the throne, Sumantra began to scold her in presence of Dasaratha. He said "you are following your mother in your conduct. A *nim* tree never sheds honey. Your mother's conduct is well known to me. Your father obtained a boon from a sage by which he could understand the voice of all creatures. One night he heard the voice of a bird named *Jrimbha* and having understood that he laughed heartily. Your mother at that got angry and asked your father the

reason of his laughter. He said that he would have to die if he told her the cause. Your mother said 'whether you live or die you will have to say to me'. Thereupon the king went to the sage who granted the boon and he told him that he should not tell, whatever the queen may do. The king hearing the words of the sage came and drove away your mother".

The principal points of agreement and difference among the three stories are given below. The three kings obtained the secret from three places but though the sources are different the result is the same. In the story in the *Rāmāyaṇa* the king laughed hearing the voice of a bird, but in the other two stories the king laughed hearing the voice of an ant. Again in the *Jātaka* story the king laughed thrice but in the *Vratākathā* the king laughed only once. In the *Rāmāyaṇa* story the king at the advice of the sage drove away the queen, but in the two other stories, the kings went to die accompanied by the queen, with this difference that the king in the *Jātaka* went to the garden and the king in the *Vratākathā*, like an orthodox Hindu, went to the side of the Ganges. In the story in the *Rāmāyaṇa* there is no mention of the goats which are found in the other two stories, but the goats in the *Vratākathā* are mere animals, whereas those in the *Jātaka* are Sakka and his wife. In the *Vratākathā* the king and the queen are ultimately united but there is no such union in the other two stories. Again in the story in the *Rāmāyaṇa* and in the *Vratākathā* there is no mention of the imposition of the condition of death on divulging the secret to another although the kings declared that they would have to die if they divulge the secret. I wish to point out here that there is nothing peculiarly Buddhistic about the *Jātaka* story. If we exclude the introduction and the conclusion then it becomes an ordinary Indian story and there are many such stories in the *Jātaka* collection.

In conclusion it may be said that the story in the *Rāmāyaṇa* is the oldest and furnishes the basis of the *Kharaputta jātaka* and the *Vratākathā* contains the *Jātaka* story in a somewhat altered form.

The Besthas of Nellore

By S. T. MOSES

Introduction. The ethnology of our various Fishing castes to improve the socio-economic condition of which, among other things, the Department with which I am connected is devoting its attention, has always interested me. The work of recording observations on their customs, beliefs, etc., done during leisure hours was hitherto confined to the West coast and to some Tamil districts in the South. Last year, however, as Assistant Director of Fisheries, Inland, I had opportunities of doing similar work in the Telugu districts and this paper embodies the notes on a Telugu fishing caste, the "Besthas" of Nellore.

The Caste, its Names and Divisions. Two common synonyms of the Besthas are 'Boya' and 'Mothirazu'. The first name survives in the appellation 'Boy' given to that familiar servant indispensable in Anglo-Indian households. The name 'Mothirazu' meaning 'Pearl Razu' indicated, as a proverb current among them says, the caste was as pure as a pearl. It has a variant in 'Machi Razu' (Fish Razu) and my informant related the story given by Thurston in his monumental work "The Castes and Tribes of South India" to account for the 'Mutrachas' having taken to fishing, as the one for the modification of the name Mothirazu into Machirazu. They were originally Kshatriyas and so being among the twice-born wore sacred thread. Once a party of Mothirazus while returning home after a hunting excursion, saw plenty of fish in a pond and yielding to a sudden temptation they used their sacred threads as lines and started fishing. They were unfortunately seen by some Brahmans while thus engaged and so they not only lost caste but got their new name 'Machirazu'.

The Besthas form one single community without subdivisions. The endogamous subdivisions 'Telaga' and 'Parigirti' are no longer clear; all Besthas being Vaishnavites the subdivision 'Telaga' is perhaps extinct in Nellore. The 3rd division referred to by Thurston, 'Kabbili' or 'Kaberavandlu', seems unknown. Among the Balija or Kavarai, however, is a subsection named 'Kavaraivallu' whose occupation is 'fishing and fish-selling'. These people have, however, nothing to do communally with the Besthas.

Like all other Hindu castes the Besthas have house-names (Gotra or Intiperu) usually named after flowers. Some are named after crabs, prawns, and frogs (kappa). The frogs referred to here were explained to me to be not the true frogs

but the fish 'Ravana Kappa', the Jumping Goby (*Periophthalmus*). As usual the prohibitions eschewing members of the particular Gotra from handling the flower or animal giving its name to it are in vogue.

Traditional Origin. The Besthas claim descent from Sutudu, the famous expounder of the Mahabharata, whose ancestry is traditionally traced to the progeny of Hanuman, whose stone figures are common all over the Telugu districts, by his union with a Water-nymph.

Occupations. The occupation of the Besthas to-day is as 'cultivators, agricultural labourers, porters, messengers, land-owners, tenants, raisers of farm-stock, grass-sellers, fishermen, and sellers of fish'. The ancestral occupation of hunting and fishing is almost abandoned, many having taken to agricultural and miscellaneous pursuits. The fishing done by the Besthas who are fresh-water fishermen, par excellence, is confined to the irrigation tanks, channels, etc. Fishing therefore is possible only for a few months in the year. Besides, the quantity of fresh-water fish available in the district is, as compared to the supply from the sea, considerably small, though stocking operations have of late added enormously to the catches. It is no wonder therefore that all except the old and the otherwise unemployed have abandoned an occupation which keeps them going only during the hot weather when the tanks, etc., run dry. The industry of net-making which with net-mending is attended to by them just before the fishing season is negligible in its importance. Some Besthas are literate—their keenness in the matter of the education of their children is something uncommon among fisherpeoples—and seek employment under Government, in mercantile offices, or under private employees as peons and other menial servants. The changed conditions as regards transport to-day have deprived the Besthas of one of their important subsidiary occupations. It is indeed curious that both in the Malabar and the East coasts palanquin-bearing should have been associated with fisherpeople as one of their sidelines. During the days of the East India Company and earlier when transport facilities were practically non-existent and railroads had not been laid, the Besthas rendered useful service by carrying officials on palanquins on a system of daily wages. In recognition of these services the Nawabs gave them the right to catch fish in some irrigation tanks free of payment. Even to-day, the Besthas of Nellore town enjoy the fisheries of Nellore and Surveypalli tanks, a nominal annual rental of Rs. 200 being payable by them, under the old prescriptive conditions.

Fishing Gear. The basket traps and cruives which are fixed in paddy-fields and irrigation tanks and the *Edu vala*, a bag-net, also fixed in irrigation channels, are used for catching fish-fry and immature fish. Of the traps the *Joowa*, the one

most successfully used for catching the *Murrel*, and the *Koduma*, a bigger contraption, are popular. The last is placed along the channel crosswise, the side facing the current being that with the one hole and not that with two. This arrangement takes advantage of the habit of fish usually swimming against the current. The common net in use—'the insignia of the Besthas, as recorded in Conjevaram, is a net'—is the *Visuru vala*, the cotton cast net, circular in shape and weighted with tiny metal beads at regular intervals along the periphery.

Ceremonies and Beliefs connected with Nets and Fishing.

New nets are used after pujah is offered to the deity, usually the goddess. When a new net is shot, the first haul is carefully gathered to see if inauspicious brutes like snakes have got in. If a snake were to be found among the first catches the net is summarily rejected and never more used. The tortoise is another of the inauspicious creatures. Whenever it is found in the haul, be it the first or a later one, the net becomes polluted but not unfit for use. The tortoise is let go at once but the net is used again only after it undergoes a cleaning ceremony at the hands of a Brahman priest and has holy water poured on it by him. When a new net is used for the first time and no unlucky creatures are in the haul one of the fish caught is taken and the net smeared with the blood and entrails of the fish; then a strand is broken from the net to be dropped later into fire along with incense. A net touched by a woman in her menses is unfit for use unless a *Punyahavachanam* ceremony is performed by the Brahman priest, as in the case of the net defiled by the arrival of a tortoise in its haul.

When poor fishing results from their labours, the Besthas believe that the goddess demands certain austerities of them and so sleep on bare or hard floor and even practise sexual abstinence, etc., for getting better results. They, however, do not apparently favour joint action for they believe that drag-nets, to work which several men are required, are unlucky and so do not adopt that method of fishing.

Puberty, Marriage, and Childbirth Customs. When a Bestha girl attains puberty she knots her hair up in a special way called 'Koppu'. She cannot during her first menstrual seclusion have her meals served in a metallic vessel as is usually done in her household; an earthen bowl is purchased for her exclusive use and later thrown away.

Marriage is, as a rule, of the postpuberty type, though child marriages seem to be not uncommon. Widow marriage is never permitted. Monogamy is the rule though under special circumstances a man is allowed to take a second wife, when the first is alive. If the wife is barren, or suffering from a loathsome disease like leprosy, or is of unsound mind, the headman of the caste may grant him permission to marry another. In all cases the wife is formally required to give her consent,

but if she is unreasonable, the headman can authorize the husband to go ahead without it. But in most cases it is, curiously enough, easily obtained.

Pollution after confinement usually ends on the 10th day. But in the case of the woman who loses her first born the period is shortened by 1 or 3 days then and for every subsequent confinement. The day of her bath after which she ceases to pollute falls then on the 7th or 9th day. A curious etiquette is observed among the Besthas on the bathing day. The woman friends of the convalescent mother visit her on that day and bring each a pot of warm water which is poured on her head during her bath.

The children are usually named after gods and goddesses, 'Iah' being the termination usual among boys and 'Ammah' among girls.

Adultery and Divorce. Laxity of morals is never tolerated in the community, and in fact severely punished, the delinquents being heavily fined or even excommunicated. If the outcastes are penitent, they are after sufficient time and on the payment of adequate penalties taken back into the fold.

Divorce is not easily obtainable. The complainant, wife or the husband, should produce sufficient cause for separation before such a decree is given by the headman. A curious feature in the divorce cases is that whoever the complainant, the husband has to pay the woman after the divorce a monthly maintenance allowance.

Food. As regards the dietary of the Besthas, all the usual animal and vegetable foods seem welcome except the taboos imposed on people because of their *gotras*. Tortoises are, however, universally avoided as food. The flesh of the monitor which is sometimes hunted after is a favourite article of diet. It is also preserved in the form of a powdery meal and is said to be of great medicinal value. The Besthas as a class are not so much addicted to drink as the usual run of fisherfolk though drinking is much in evidence during festivals and other gala occasions.

Caste Organisation. The members of the community of each place obey a headman called the *Pedda* (great) *Boyadu* who is assisted by the *Padiyal* who is equivalent to the *Thandalkaran* of other castes. The *Pedda Boyadu* is accepted by the village community as the highest civil and judicial authority in the village, before whom all disputes among the members of the community are brought for settlement. All questions relating to morals, divorce, etc., are placed before him for final disposal. He has absolute powers to fine or outcaste the delinquents of the community. The posts of both the headman and his assistant are hereditary and they carry certain perquisites with them. These officers enjoy precedence over

others in the matter of being served with *Pansuparsi*, etc. during matrimonial and other functions.

Religion. The Besthas are Hindus by religion and worship the local deities along with other Hindu castes. *Vishnu* is worshipped all over, usually under the name *Parkirathi*. Some even consider him as one of the village deities. Their favourite deities, however, are the goddesses (*Ishtadevatha*) to offer Pujah to whom they have constructed special places of worship called '*Mandiram*s'. Here they congregate often to perform *Bajanas* or musical services. The priests officiating at the *Mandiram*s are of their own caste. These conduct daily *Pujah* as also the annual festival when animal sacrifices are offered. A remarkable feature in connection with worship here is that ordinarily no animal flesh nor liquor is ever offered to the goddess. When fishing is successful and remunerative, it is celebrated by a grand festival with *Pujah*s, *Bajanas* and other demonstrations. This is often accompanied by much merrymaking and drinking. New nets are used only after *Pujah* to the goddess.

Marriages, funerals and purificatory ceremonies are performed by priests not of the Bestha community. Only Brahman priests are employed to officiate during such functions. The services of Bestha priests are often requisitioned by other castes in connection with festivals in honour of terrible deities like *Mariamamah*.

Habitations. The Besthas have no separate villages, '*Kuppams*' or '*Palayams*', as the sea-fishermen have. They live in villages and towns along with other Hindu castes, though their houses are often located almost together. Being mostly poor, the houses are huts with thatched roofs though the well-to-do live in more substantial buildings.

General Appearance. The men and women may claim to be classed as fair-skinned though most of them are sun-tanned. The men are tall in stature (Average height: 5 ft. 5 in., Maximum: 5 ft. 10 in. and Minimum: 5 ft. 1 in.) and healthy and robust in appearance, though not thick-set.

Cranial and Nasal Measurements. Measurements were taken at places wherever possible like Nellore, Kavali, Tangaturu, Chundi, and Surveypalli and the total number of individuals measured was only 47. The nasal index averaged 75.6, the maximum being 88.7 and the minimum 66.3. The cephalic index averaged 77.5, the maximum being 86 and the minimum 69.4.

Present Condition and Social Status. Living as the Besthas do, with other communities, they offer a healthy contrast to the usual type of fisher-community by being cleaner, more literate and more responsive to good influences. In fact, they show signs of developing fast into a civilised caste. However, it is the unemployment problem that is keeping most of them poor

both in spirit and in worldly goods, and the general lot of the ordinary Bestha is rather pitiable. The Besthas occupy a low scale in the social status though the caste is considered to be high up among the low ones.

Religion and kingship in ancient times

By J. C. DE

The relation between the State and the Church cannot fail to interest the student of Anthropology, because it gives rise to problems, on the proper, equitable and speedy solution of which, much of the progress and happiness of all the races of mankind depend. In the persecution of the early Christians by Imperial Rome, the burning alive of Lollards in mediæval England, the nine religious wars of modern France, the Thirty Years' War of disunited Germany, and the terrors of the Inquisition and iron-heeled despotism which crushed out the material of future national greatness in united Spain, lay the fruits of an extremely culpable and unwise political judgement. Modern England was not exempt. The executions of the great More and others, the wail that followed the dissolution of monasteries, the butchering of prominent Protestants by Mary, the daughter of a no less cruel father, the obnoxious disabilities of various religious sects which remained in force till recent times, and the heartrending bitterness of the Anglo-Irish struggle at least in its modern phase, are a few of the evils which England had to face, for her inability to adjust the Great Relation in a calm and sympathetic spirit.

In the East also, the relation of the Throne to the Temple, the Mosque and the Church, aroused intense passion and bred interminable discussion. When the trumpet call of the Prophet Mahammad created something great out of almost a nonentity, and the Crescent swept on from country to country, till it floated triumphant in Africa and Europe, the question arose—was there any room for the non-believer under it? The gifted Mahomedan leaders rose to the occasion, and answered the question in a truly statesmanlike way for the moment, and great catastrophes were averted. But that was not the end, and many a Sultan in many a land allowed narrow bigotry to outweigh statesmanship. It is to the credit of the Turk, that he extended a measure of toleration to his Christian subject, which, though contemptuous, was certainly rare in contemporary Europe.

In India, one of the earliest religions was Hinduism. Causes of its decay however appeared soon. ¹ The advent of the world-religion, Buddhism, patronised by the great Maurya, hastened the collapse, and Hinduism very probably sank into a religion of the minority. But the decline was temporary.

¹ Prof. De : Kālidāsa and Vikramāditya (p. 175).

Hindu sovereigns came to govern the destinies of India, and the revival of *āśvamedha* sacrifices sufficiently indicated the direction in which the wind was blowing. The revolt against the Saṅghas was really against the foreigner, the Turki, the Parthian and the Scythian, as well as of the old against the new, of conservatism against reform. Mr. Havell calls it "a re-awakening of the profound spiritual instinct" of the "race which found expression in a great renaissance" of "poetry, drama, and art"¹, and if we may add, the science of government. No accurate date can be fixed for it. It however, permeated the ideas and activities of the Hindu for centuries, and became as momentous to him, as the Renaissance which succeeded it nearly a thousand years afterwards, to the Christian. It blossomed forth thick and heavy during the Gupta Period which gave the Hindus that cultural comradeship which binds them even to-day.

The sources of information of this period on which reliance can be unhesitatingly placed, are the inscriptions on stone, copper and iron, the numerous coins issued by the various rulers, and the contemporary accounts of foreigners. Our knowledge from Hindu sources can be readily checked and supplemented by Buddhistic ones.

The action and reaction of religious on political life may be treated first.

The social position of a Hindu depended upon his belonging to any of the three higher castes, the Brāhmanas, the Kshatriyas and the Vaiśyas. The Sūdras occupied an inferior status. The Caṇḍālas, who perhaps belonged to the lowest stratum of the Sūdras, had to "live apart from others," and were "held to be wicked men." "When they" entered "the gate of a city or a market place, they "had to" strike a piece of wood to make themselves known, so that men should avoid them"².

The fear of the spread of Buddhism, which taught the equality of men, made the Brāhmanas very jealous of their position. The ideal kept before them was rather high. They were expected to be (the inscription in question says that they actually were) "endowed with truth, patience, self-control, tranquility, religious vows, purity, fortitude, private study, good conduct, refinement and steadfastness," and "abounding in learning and penances, and free from the excitement of surprise"³. Such an ideal conceivably enabled the Brāhmanas to occupy the post of honour among their co-religionists on the ground of their worth. To kill or rob Brāhmanas was to commit one of the five great sins, and the guilty person was supposed to go down

¹ Havell: *Aryan Rule in India*—pp. 151-152.

² Legge, p. 43; Giles, p. 21.

³ F.G. I., No. 18, l. 8.

to hell¹. To marry the daughters of Brāhmaṇas to suitable bridegrooms, and to "dower them with *agrahāra* grants" on the occasion, were thought to be acts of merit, and Dāmodara-gupta for example, is praised for doing so². The respect shown to a Brāhmaṇa on account of his caste is also fully testified to by the copper charters of the period, a large number of which record the gift of land, *vāpīs* (cisterns), *kūpas* (wells), etc., by the princes to Brāhmaṇas for the "acquisition of religious merit" by the grantee, his parents and others.

We have also to remember that the Gupta Emperors themselves were probably *Sūdras*, while the majority of the numerous subordinate rulers of those days were probably *Kshatriyas*³.

We come across some princes, for example, Mahārāja Mātrivishṇu and his brother Dhanyavishṇu, who were Brāhmaṇas by caste. But apparently they were small in number.

The Brāhmaṇas were divided into various *śākhās* and *carakas* to facilitate the acquisition of a knowledge of the Vedas and the literature connected with them. It seems that the culture of the day was propagated mainly by them.

The Mānava Dharmasāstra (the code of Manu) and the Vāyu Purāṇa probably belong to the second or third century, the Yājñavalkya Smṛiti to the fourth, and the Nārada Smṛiti to the sixth century A.D. The science of astronomy was also greatly improved by Āryabhaṭṭa (born 476 A.D.), Varāhamihira (505-587 A.D.) and Brahmagupta (598 A.D.), while the art of architecture was practised on a large scale with eminent success. The *Mudrārākṣhasa* was written by Viśākhadatta during the latter part of the fourth century, and the dramas of Kālidāsa were probably composed during the reign of Kumāragupta I. Painting as exemplified by some of the best frescoes at "Ajanta and the cognate works of Sigiriya in Ceylon (479-97 A.D.) was also practised with consummate skill"⁴. Some of the emperors themselves, the most noticeable instance being that of Samudragupta, were also scholars of a high order.

Though it is certain that all of these leaders of thought were not Brāhmaṇas, they however, generally speaking, were the finest exponents of the revived Brahmanical culture.

Raised by his social position, respected by his King, sanctified by a culture which placed him in the forefront, edified by the ideal of a virtuous life which was persistently kept before him, the hereditary Brāhmaṇa priest became a potent factor in the Hindu State.

¹ F.G. I., p. 38, n 4; No. 16. lines 11 and 12.

² F.G. I., No. 42. lines 9 and 10

³ Beal: Si Yu Ki, Vol. II, p. 267.

⁴ Dr. Barnett: Antiquities of India (page 90); Smith; E.H.I. 3rd Edition, p. 305.

⁵ *Ibid.*, p. 306.

Even in our own day, we find that the interval of centuries has not been able to efface this characteristic feature of Hinduism. His Highness the Mahārāja of Alwar celebrated his jubilee in the afternoon of the 18th of January in a befitting way. Surrounded by his chobdars and fan-carriers, seated on a golden throne, supported by his bodyguard in blue and gold on either side, faced by his hundreds of Sirdars and Durbaris wearing crimson turbans, and waited upon by thousands of his subjects, he presented a glorious spectacle. It was "an imposing moment", "when the priests chanted prayers, and His Highness was sprinkled with holy water no less than 64 times." "Another was when His Holiness Śaṅkārcārya arrived at the Durbar." The Mahārāja descended from the throne, and the Swāmī "hung a necklace round his neck." Later on "the three chief high priests gave special blessings and lectures, the latter lasting an hour each."¹

The next interesting question which naturally arises is, "what was the attitude of this Brāhmanical state towards its Non-Brāhmanical subjects?" Brāhmanism, Buddhism and Jainism were the three principal religions during this period. Besides these, there were the followers of Devadatta who "made offerings to the three previous Buddhas, but not to Śākyamuni Buddha." Ninety-six "heretical" sects other than the Devadattans are also mentioned by Fa Hsien².

Fa Hsien saw Buddhist monks and nuns all over Northern India. At his first resting place after crossing the Indus, monks asked him about the Law of the Buddha³. In Udyāna (almost identical with the modern Swat Kohistan) he found Buddhism to be "very flourishing," and there were five hundred Hinayāna Saṅghārāmas in that kingdom⁴. In Soo-ho-to (identical more or less with Buner), he noticed a tope of the Buddha "adorned with layers of gold and silver plates." In the kingdom of Purushapura (Peshawar), there were seven hundred monks in the Monastery of the Alms-bowl alone. "Of all the topes and temples which" Fa Hsien and his companions saw in their journeyings, there was not one which could be compared to this monastery "in solemn beauty and majestic grandeur"⁵. In Pe-t'oo, the country between the Indus and the Jhelum, Fa Hsien found both Mahāyāna and Hinayāna monks who supplied him and his companions "with what they needed, and treated them in accordance with the rules of the Law"⁶. From Pe-t'oo to Mathurā the country was full of "a multitude of monks who might be counted by myriads." In

¹ *The Statesman*, Calcutta, Dak Edition, January 20, 1929.

² *Ib.*, p. 62.

³ *Ib.*, p. 27; cf. Giles, p. 10.

⁴ *Ib.*, pp. 28 and 29; Giles, p. 11; Rémusat gives "seng kia lan" as the form.

⁵ *Ib.*, pp. 30 to 35; Giles, pp. 12 to 15.

⁶ *Ib.*, pp. 41 and 42.

the kingdom of Sankāśya lying along the Jumna to the south of Agra, there were nearly a thousand monks and nuns, and at Kānyakubja there were two Hinayāna monasteries¹. At Śrāvastī Fa Hsien and his friends found a crowd of monks and a number of religious buildings, of which the Jetavana Vihāra was one². "The inhabitants were" however "few and far between, amounting in all (only) to a few more than two hundred families." In Kapilāvastu also "all was mound and desolation." "Of inhabitants there were only some monks and a score or two of families of the common people"³. A celebrated tope at Rāmagrāma near which a monastery had been built by "the king of the country" not long before his visit, was also noticed by Fa Hsien⁴. In Gaya, at the place where the Buddha "attained to perfect wisdom" there were "three monasteries all of which were tenanted by monks"⁵. Hinayāna monks were also found by the pilgrim at Kauśāmbī, and in the district of Bhagalpur there was a number of topes with "monks residing in them all"⁶.

The evidence is corroborated by the existence of some Buddhist inscriptions of the period⁷.

Jaina inscriptions show that Jainism also existed, but probably was not a serious rival of the other two. The famous Jaina Council which codified the aṅgas also met at Valabhi during this period.

The fact that the Gupta Emperors and the majority of the princes were Brāhmanical Hindus probably indicates that Hinduism was gaining fast on its rival, Buddhism. The numerous grants to Brāhmanas and their gods by the state and individuals together with the employment of Classical Sanskrit—the sacred language of Brāhmanism—in official inscriptions by the ruling potentates also lead to a similar conclusion.

The Brāhmanas are said by Fa Hsien to cut down the tree of the danta-kāshṭha (tooth-brush) of the Buddha, and quarrel with the śramanas about the shadow cast⁸ on their temple by the Buddhist vihāra. They are said to hold "contrary doctrines" (*i.e.*, doctrines different from those of the Buddhists) and are called "malbelievers." Sung Yun says that the inhabitants of the country round Shen-chi hill believed that the son of Prince Sudatta and his sister had been beaten by a Brāhmaṇa with rods, "till the blood flowed down and moistened the earth"⁹.

The currency of a story like that proves that an attempt

¹ *Ib.*, pp. 47, 51, 54.

² *Ib.*, pp. 55 to 58.

³ *Ib.*, p. 64.

⁴ *Ib.*, pp. 68 to 70.

⁵ *Ib.*, p. 89.

⁶ *Ib.*, pp. 96 and 100.

⁷ *e.g.* F.G.I.; No. s 5, (93 G.E.), 11, (129 G.E.), 62, (131 G.E.), 63, (135 G.E.), 70, (230 G.E.). 71, (269 G.E.), 68, (C. 5th century A.D.) etc.

⁸ Legge, p. 61.

⁹ Beal: Sung Yun, p. xcvi; also "Sung Yun" by the Nagri Pracharini Sabha, pp. 22, 23, 49-55.

was made by the Buddhists to create a feeling of animosity against the Brāhmaṇas.

Saśāṅka, the king of Gauda, or lower Bengal, is said to have exterminated Buddhism, and consequently "the groups of Brethren were all broken up"¹. He tried to efface the foot-prints of the Buddha on a stone near Pāṭaliputra and failing to do that, he caused it to be thrown into the Ganges². Not content with this, "the enemy and oppressor of Buddhism" (as Saśāṅka is called) "cut down the Bodhi tree, destroyed its roots down to the water, and burned what remained." From these stories it is quite apparent that a persecution of the Buddhists took place in Bengal and Magadha.

The Hūṇa chief, Mihirakula, also is said to have been a persecutor of Buddhism, to have destroyed all the priests of the five Indies, and to have overthrown the Law of Buddha and left nothing remaining³.

The performance of the *aśvamedha* sacrifice by Hindu emperors undoubtedly wounded the religious feelings of their Buddhist and Jaina subjects to whom the killing of the sacrificial horse must have been extremely repulsive.

We must, however, remember that the instances we have cited above are not, after all, many, and the small number itself is a proof, though a negative one, of the general prevalence of toleration.

Moreover, a close examination of the information available about Mihirakula, one of the two persecuting kings of the period, raises some doubts and difficulties. He was certainly a ruler descended from a tribe settled in the steppes of Asia, an admixture of the Chinese, Hsiung Nu and Tung Hu.⁴ He had been grafted on a portion of Western India, and had probably never assimilated the Hindu culture of his days. A study of his career, moreover, convinces one of the extraordinarily ruthless traits of his character. Yuan Chwang tells us that in his attack on Gāndhāra he slew many people in cold blood, gave some as slaves to his soldiers, and took away the wealth of the country.⁵ The Rājatarāṅgiṇī mentions his wanton destruction of a hundred elephants, and the massacre of millions of women with their brothers and husbands. It is also significant that the Chronicle of Kashmir does not mention anything about the persecution of Buddhists. Moreover the Buddhist accounts of Yuan Chwang and Hsui Wuh tell us that Mihirakula was a Buddhist and not a Hindu in the earlier

¹ Watters: Yun Chwang p. 43.

² Watters, p. 93.

³ Beal: Si Yu Ki; Book iv, p. 168.

⁴ An unpublished article of Sir E. Denison Ross, kindly supplied to the author.

⁵ Beal: Si Yu Ki, pp. 166-172.

part of his career. We must also remember that Mr. Pāthak's identification of Caturmukha Kalkī, who, according to Gunabhadra the author of the Uttarapurāṇa, persecuted the Jain sect of the Nirgranthas, with Mihirakula, is very doubtful.¹

On the other hand, instances and considerations leading to a contrary view are so numerous and weighty, that the historian cannot but conclude that the general attitude of the Hindu state towards the Buddhist and Jain Churches was one of toleration.

The Buddhist, Fa Hsien, tells us that "the inhabitants" of Magadha vied "with one another in the practice of benevolence and righteousness," and "every year on the eighth day of the second month, they" celebrated "a procession of images." Among these images of Hindu gods, which were carried in a four-wheeled car, there were those of Buddhas seated in the niches "on the four sides" with Bodhisattvas "standing in attendance on them"².

When Sung Yun—the Buddhist—fell ill near the Shen-chi hill, the Brāhmaṇas seem to have taken care of him, and cured him by their charms³. The ambassador in the course of his remarks on Peshawar, probably records the existence of a Brahmanical temple frequented by "all religious persons." He adds that a Buddhist vihāra called the White Elephant Palace existed not very far from the Hindu temple⁴.

Emperor Candragupta Vikramāditya, the son of the great Samudragupta, is officially described as being "specially devoted to Vishnu," and a person who conformed strictly to the precepts of his religion, because he is not only called a Rājādhirāja but also a rishi or a saint⁵. But his orthodoxy did not prevent him from employing non-Brahmanical officers of state. The Udayagiri cave Inscription tells us that the Buddhist Āmrakāradava, who granted the village of Isvaravāsaka and a large sum of money to the Buddhist monks of Sanci, was a person whose "means of subsistence" was "made comfortable by the favour of the feet" of Candragupta II (Candragupta-pādaprasād-āpāyita-ivita-sādhanaḥ). His munificent donation to the vihāra shows that he was a person of consequence. The fact that he "acquired banners of victory and fame in many battles"⁶ shows that he probably held commands of the imperial armies. Fa Hsien tells us that the ruler of Mathurā—who must have been one of the governors of Candragupta—supplied "food with his own hands to the monks", and showed great respect to them⁷. The very existence of a great number of prosperous

¹ Uttarapurāṇa, verse 396, Caturmukhāhvayaḥ kalkī rājodvejita-bhutaḥ : Bhandarkar Commemoration volume, pp. 216 and 217.

² Legge, p. 79; Giles, p. 47.

³ Beal—Sung Yun, p. xcvi.

⁴ Beal—Sung Yun, pages cii and ciii.

⁵ F.G. I., No. 6, l. 3.

⁶ F.G. I., No. 5, l. 4.

⁷ Legge, p. 42.

Saṅghārāmas all over the country during his reign, also proves that the emperor did not like to interfere with the religious practices of his subjects.

In the Valabhi grants, the phrase, *mātā-pitroḥ punyāpāyanāyātmanascāhikāmushmikayathāabhilashitaphalāvāptinimittam* [i.e., for the increase of the spiritual merit of parents, and for the attainment of blessings in this life and the life hereafter to the utmost limit of (the grantee's) desires] occurs, in grants to Brāhmanas¹ for performance of the agnihotra, atithi and the three Māhā-Yājñas, as well as in those for the upkeep of vihāras, feeding of bhikshus, and supply of perfume incense and oil for lamps placed before images of Buddhas².

It is therefore apparent that even a parama-bhāgavata Hindu ruler thought that a grant for Buddhist religious purposes would lead to an increase of religious merit in the same way as one for Brahmanical purposes would. In at least one grant to Buddhists, we find that ślokas from the Hindu epic, the Mahābhārata, were quoted. We also remember that the parama-māheśvara (the devout worshipper of Śiva) Guhase-na I, granted four villages with all appurtenances to the Śākya, Bhikshusaṅgha (or the Community of Buddhist monks) belonging to several Hinayāna schools attached to the monastery of Duddā to provide the necessary expenses for their food, clothing, bedding, and medicine. The object of the grant was to increase the religious merit of himself and parents.³

One other fact that supports our contention is that grants for religious purposes were freely made by Buddhist and Jaina citizens and publicly recorded on stone. Thus we find that the two Śākya bhikshus who lived in the same village of Tishyāmratīrtha granted a Buddhist stone statue, found at Bodh Gaya. The fact that the king's name is not mentioned in the inscription leads to the presumption that the religious gift was considered to be valid even without the express sanction of the reigning king⁴. The same remarks apply to the gift of a pillar at Sanci in the Bhopal state by a vihārasvāmin, and of a Buddhist image, discovered in the excavations of Bodh Gaya, by the Śākya bhikshu, the Sthavira Mahānāman⁵. Mahānāman is said to be the resident of Amradvīpa or the Mango-Island which Cunningham identifies with Ceylon, because it resembles a mango in shape. We may also point out that there is an Indian tradition which asserts that mangoes were introduced into India from Ceylon. Dr. Fleet thought it to be probable that this

¹ e.g. E.I., vol. III, pages 320 to 322.

² e.g. in plates of the same prince in J.R.A.S., Vol. XXVII.

³ I.A., IV, p. 175, l. 5.

⁴ F.G. I, No. 76.

⁵ F.G. I, No. 72.

Mahānāmaṇ was "the person of that name who composed the more ancient part of the Pāli Mahāvamsa" ¹.

Such instances can be easily multiplied. In the Gorakhpur district of the United Provinces of Agra and Oudh, Madra set up five stone images of the five Jaina Tirthaṅkaras and recorded this presentation in an inscription of twelve lines on a grey sandstone column. The approval of this gift by the Hindu Emperor Skandagupta is apparent from the mention of his name and occurrence of his eulogy in the body of the inscription. Madra, who was apparently a Jaina, reflects the generally tolerant spirit of the age, and his inscription-writer expressly mentions that he was "especially full of affection for Brahmanas, religious preceptors and ascetics" ².

Another notable fact is that classical Sanskrit, the sacred language of Hinduism, was employed to record gifts and presentations of rival religions.

We therefore naturally come to the conclusion that toleration of the religion of the subject was the rule, and persecution an exception during this period of Hindu ascendancy.

¹ F.G. I., p. 275.

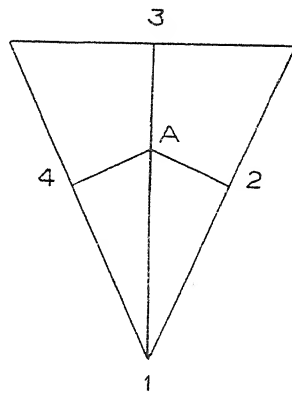
² F.G. I., No. 15.



On a Type of Sedentary Game prevalent in Shahpur, the Punjab

By HEM CHANDRA DAS-GUPTA

The game that is described in this note is a type of tiger-play prevalent in the district of Shahpur in the Punjab. It is known locally as the game of *sher-bakr*, i.e., tiger-goat. The details of the game were obtained from the sub-assistant surgeon in charge of the charitable dispensary of Pail (Shahpur) in the Salt range, a locality I had an occasion to visit during the Puja vacation of 1929 in connection with some geological work. The diagram that is used for playing this game is given below :—



Two persons are necessary for playing this game, one being in charge of one piece, the tiger, and the other in charge of four pieces, the goats. At the commencement of the game the four goat pieces are to be kept at A and the tiger piece at the apex of the triangle, i.e., at the point marked 1. The possessor of the goat pieces has to move one of his pieces first and then the usual rule is followed according to which a goat piece and the tiger piece can be moved only from one cross-point to another. But there are two rules of this game which are worthy of special notice. In all types of tiger-play which have hitherto been recorded, e.g., from Orissa,¹ Tibet,² Sumatra,³

¹ *Journ. Asiat. Soc. Bengal*, N.S., XXII, 212-213, 1926.

² Riu-chen-dha-Mo (Mrs. Louis King): *We Tibetans*, 141-143, 1926.

³ *Tidjschr. Ind. Taal-, Land- en Volkenkunde*, Deel LVIII, 8-10, 1919.

Kolhan,¹ Eastern Bengal,² Mianwali,³ and British Garhwal,⁴ the tiger piece may jump over a cross-point occupied by a goat piece provided the cross-point next to it and in the same straight line is vacant and capture the goat piece. According to the rules of the game as prevalent in Shahpur, the tiger piece may capture the goat piece in this way, while it may also, for the purpose of capturing a goat piece, jump round the angle *A* either from 2 to 4 or from 4 to 2. This is a type of movement which has not been hitherto recorded from anywhere as far as my information goes. It may also be pointed out that there cannot be more than one goat piece on one cross-point though at the angle *A* there may be more goat pieces than one. If, however, the tiger piece succeeds in jumping over *A* and if at that time there are goat pieces more than one only one piece may be captured, recalling in this matter the rules of game prevalent in Mianwali and British Garhwal. Another important peculiarity to be noted in connection with this game is the form of the diagram used for playing it. All the diagrams known hitherto in connection with tiger-play are of a square or rectangular type and a triangular diagram, as depicted above, does not appear to have been recorded from anywhere else. The goats try to checkmate the tiger and this attempt cannot succeed unless all the four goats are in activity; hence if only one goat is captured the owner of the tiger piece is victorious.

¹ *Man in India*, Vol. V, 196-198, 1925.

² *Quart. Journ. Bangiya Sahitya Parishad*, XIV, 240-241, 1314 B.S.

³ *Journ. Asiat. Soc. Bengal*, N.S., XXII, 145-146, 1926.

⁴ *Ibid.*, N.S., XXIII, 297-298, 1927.

Synthesis of a few Antimonials of Therapeutic Interest

By U. N. BRAHMACHARI and J. M. DAS GUPTA

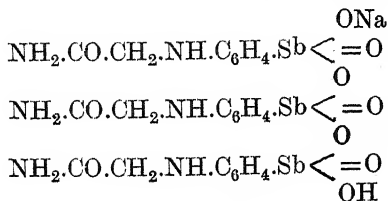
The present paper contains an account of some organo-metallic antimonials, which have been synthesised by us with the same object in view, as in the case of the compounds described in a previous paper contributed by us to this *Journal* (Vol. XXV, 1929, No. 1). They are amorphous and extremely difficult to purify. The chemical operations involved in their preparation are given below. As regards toxicities, we have noticed that in these as in the previous compounds the general rule holds, *viz.*, introduction of sulfoxyl groups lowers the toxicities to a considerable extent with a decrease in the therapeutic value. The nature of the basic portion also affects, to some extent, the stability and the toxicity of the compounds, *viz.*, urea or diethylamine salt is sometimes more stable and less toxic than the corresponding sodium salt. Our object in the preparation of the following compounds is to study these latter effects as well. The compounds are not very stable, though their solutions do not decompose on standing in air for 24 hours. The following is a list of the compounds investigated by us in this paper :—

1. Sodium salt of phenyl-glycine-amide-4-stibinic acid.
2. Urea salt of the same.
3. Diethyl-amine salt of the same.
4. Carbamino-*p*-stibanilate of sodium.
5. Carbamino-*p*-stibanilate of urea.
6. Carbamino-*p*-stibanilate of diethyl-amine.

It will be seen that all the above compounds undergo polymerization (see below).

EXPERIMENTAL.

- (1) Sodium phenyl-glycine-amide-4-stibinate.

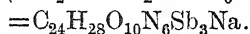
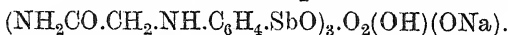


p-stibanilic acid is dissolved in the requisite quantity of NaOH solution and the concentrated solution of sodium *p*-stibanilate is added gradually to an excess of absolute alcohol, when a precipitate of sodium stibanilate is produced, which is next filtered and washed with absolute alcohol and then dried. 5 grms. of sodium stibanilate are then dissolved in methyl alcohol and treated with chloracetic ester and the whole refluxed for several hours. After the reaction is complete, the methyl alcohol is distilled off and the rest acidified with dilute HCl. The precipitate thus obtained is filtered and washed with water and then treated with concentrated ammonia. After some time, the solution is filtered and the filtrate is reprecipitated by acetic acid, when the glycine amide derivative is obtained, which is next washed with distilled water. The precipitate is then dissolved in dil. NaOH, filtered and the filtrate precipitated by adding absolute alcohol. The precipitate is then repeatedly washed with absolute alcohol and dried in a vacuum desiccator.

It is an almost white coloured powder, very easily soluble in water to a perfectly clear solution, which gives neutral reaction to litmus paper. On warming with dilute alkali it gives out ammonia. The compound prepared according to the above process has been called X_{10} , a paper on the therapeutics of which has been published by us in the Transactions of the Royal Society of Tropical Medicine and Hygiene. The method of preparation of the compound described here is better than the one originally described by one of us (U. N. B.) in the *Ind. Jl. of Med. Res.*, 1922.

Composition :—

Dried material corresponds to the formula :



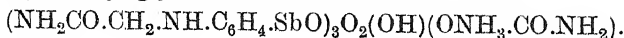
Found

Sb=38.40%, N=8.72%.

Calculated for $\text{C}_{24}\text{H}_{28}\text{O}_{10}\text{N}_6\text{Sb}_3\text{Na}$. Sb=38.17%, N=8.90%.

This compound is the polymerized antimony analogue of triparsamide.

(2) Phenyl-glycine-amide-4-stibinate of urea.



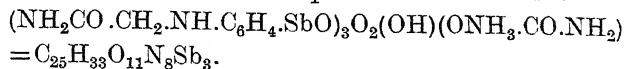
Phenyl-glycine-amide-4-stibinic acid, as obtained in the previous experiment, is made into a paste with little water, and then well mixed with an excess of urea. The whole is then warmed for some time when the acid gradually dissolves to a reddish solution, yielding a urea salt. The solution is then filtered through a Buchner funnel, and the clear filtrate pre-

precipitated by acetone. The precipitate thus obtained is dried in a vacuum desiccator after well washing with absolute alcohol.

The product is a light coloured powder easily dissolving in water to a perfectly clear solution, which is neutral to litmus paper.

Composition :—

Dried material corresponds to the formula :

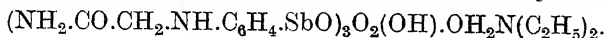


Found

Sb=36.58%, N=11.55%.

Calculated for $\text{C}_{25}\text{H}_{33}\text{O}_{11}\text{N}_8\text{Sb}_3$. Sb=36.69%, N=11.41%.

(3) Phenyl-glycine-amide-4-stibinate of diethyl-amine.

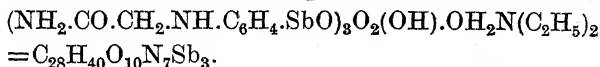


The starting material in the preparation of this compound is the same as in the previous cases. This is well mixed with a small quantity of water, and to the mixture a 30% solution of diethylamine in water is gradually added shaking it very well at the same time. Almost a clear concentrated solution is thus obtained, which is filtered and the reddish filtrate poured drop by drop into 5 times its volume of absolute alcohol. A voluminous precipitate is produced, which is allowed to settle down for some time and then filtered. The precipitate is washed well with absolute alcohol, and then dried in a vacuum desiccator.

It is a light grey coloured powder easily dissolving in water to a clear solution, which is neutral to litmus paper.

Composition :—

Dried material corresponds to the formula :

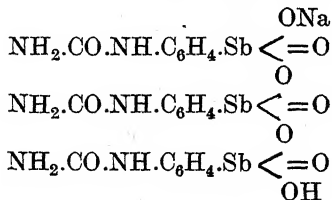


Found

Sb=36.42%, N=9.71%.

Calculated for $\text{C}_{28}\text{H}_{40}\text{O}_{10}\text{N}_7\text{Sb}_3$. Sb=36.21%, N=9.85%.

(4) Sodium carbamino-*p*-stibanilate.

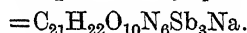
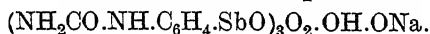


The starting material in the preparation of this compound is sodium *p*-stibanilate, produced by neutralising *p*-stibanilic acid with NaOH solution, the acid itself being obtained by hydrolysing acetyl-*p*-stibanilic acid which is a product of Bart's reaction applied to acetyl-*p*-phenylene diamine. 5 grms. of sodium stibanilate thus obtained are dissolved, at low temperature, in glacial acetic acid. To this well-cooled mixture is gradually added about 4 grms. of potassium cyanate and the mixture well stirred till a clear solution is obtained. The solution is then allowed to remain in this state for many hours. The mixture is then diluted with water and well stirred. Concentrated HCl is then gradually added which dissolves the unreacted *p*-stibanilic acid and precipitates the carbamino derivative as a voluminous mass, which is then filtered and washed with water. The wet precipitate is then dissolved in the requisite quantity of dilute NaOH solution and the reddish solution thus obtained is filtered. The filtrate is precipitated by absolute alcohol and the precipitate washed with the same and then dried in a vacuum desiccator.

The product is almost a white powder readily dissolving in water to a clear solution which is neutral to litmus paper.

Composition :—

Dried material corresponds to the formula :

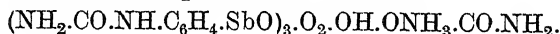


Found

Sb = 39.62%, N = 9.29%.

Calculated for $\text{C}_{21}\text{H}_{22}\text{O}_{10}\text{N}_6\text{Sb}_3\text{Na.}$ Sb = 39.95%; N = 9.32%.

(5) Carbamino-*p*-stibanilate of urea.

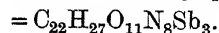
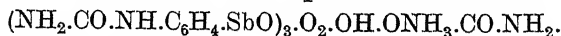


Carbamino-*p*-stibanilic acid as obtained in the previous case, is made into a paste with little water and then well mixed with a slight excess of urea. The mixture is then warmed on a water-bath when the acid gradually dissolves to a clear solution. The solution is next filtered and the filtrate precipitated by acetone.

It is a light grey coloured powder which dissolves easily in water giving a neutral solution.

Composition :—

Dried material corresponds to the formula :

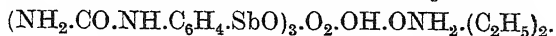


Found

Sb = 38.50%, N = 11.85%.

Calculated for $\text{C}_{22}\text{H}_{27}\text{O}_{11}\text{N}_8\text{Sb}_3.$ Sb = 38.34%, N = 11.92%.

(6) Carbamino-*p*-stibanilate of diethyl-amine.

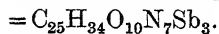
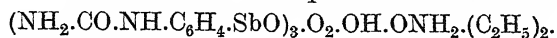


As in the previous experiment a paste is made by mixing carbamino-*p*-stibanilic acid with little water to which is then gradually added a 35% solution of diethyl-amine in water. The precipitate gradually dissolves, giving a clear solution which is filtered, and the filtrate reprecipitated by acetone.

It is a pale greyish powder which dissolves readily in water.

Composition :—

Dried material corresponds to the formula :



Found

Sb=37·62%, N=10·31%.

Calculated for $\text{C}_{25}\text{H}_{34}\text{O}_{10}\text{N}_7\text{Sb}_3$. Sb=37·81%, N=10·29%.

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Numismatic Supplement for 1930

[Journal and Proceedings of the Asiatic Society of Bengal]

Numismatic Supplement No. XLIII

[for 1930]

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*Continued from "Journal and Proceedings," Vol. XXV,
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298. COINS OF DANUJMARDANA DEVA AND MAHENDRA DEVA, TWO HINDU KINGS OF BENGAL.

The coins I propose to deal with in this article are those issued by two Hindu Kings of Bengal who call themselves Danujmardana Deva and Mahendra Deva and whose coins—those at least with clear dates—cover only 2 years, *Saka* 1339 and *Saka* 1340 (=April 1416 to April 1418 A.D., which also correspond almost exactly to the *Hijra* years 819 and 820). The brief reigns of these Kings not only constitute a remarkable break in the otherwise continuous sequence of Muhammadan rulers from early in the 13th century till the beginning of the 19th century A.D., but the mint names found on their coins prove that the Hindus became temporarily dominant all over Bengal.

These coins undoubtedly originate from the family of one Raja Ganes, a Hindu, who generally appears under the name of Kāns in Muhammadan histories (*e.g.*, that of Ferishta, and the more modern *Riyāzus-Salātīn*). To give some idea of the exact period during which Ganes flourished and the coins of these two kings appeared, I will begin by some extracts from a précis of a 16th century Persian manuscript given in Major Francklin's Account of a visit to Gaur in 1810-11, as well as by Buchanan Hamilton in his 'Historical Description of Dinajpur' (probably written in 1808). The manuscript in question seems to have been discovered in the possession of some inhabitant of Pandua.

"Shamsuddin [Ilyas] governed 12 years and was succeeded by his son Sekandar. The most celebrated person in the reign of Sekandar was a holy man named Mukhdum Alulhuk, whose son, Azem Khan, was commander of the troops. The saint having taken disgust at some part of the King's conduct retired to Sonargang, near Dhaka. ——— The good man was however soon induced to return but the King's son, Ghiyāsuddin, having also taken disgust, retired to the same place, and afterwards made war against his father, who after a reign of 32 years fell in battle at a place called Satra near Goalpara (probably Chattera river) which is situated between the Tanggon and Punabhoba, near a favourite country residence of the King.¹

¹ [Elsewhere (*Op. cit.*, p. 40), Sikandar Shah's residence is said to have been on the banks of the Tanggon, about 8 or 9 miles south of Bāmagola, now a thana headquarters in the district of Malda.]

Ghiyāsuddīn, on succeeding to the Government, put 17 brothers to death. The most holy man at his court was Mukhdum Shah Nūr Kotub Alum, son of Alulhuk. Ghiyāsuddīn governed 16 years, and was succeeded by his son Syafuddīn, who governed 3 years, and was succeeded by his slave Saha-buddīn, who also governed 3 years.

Then Ganesh, a Hindu and Hakim of Dynwaj,——— seized the Government. Enraged at Shekh Bodor Islam and his son Fyez Islam, who refused to give him the compliment due to the rank he had assumed, he put them to death. The saint Kotub Shah, who was still alive, disgusted at this action, wrote to a Sultān Ibrahim—who, in compliance with the request, came from Rajmahol with an army, and encamped at Satra. The Raja of Dynwaj was then terrified and applied, in great penitence, to Kotub Shah, and obtained his forgiveness by making his son Godusen, a Muḥammadan. This convert assumed the Government under the name of Jalāluddīn, having been reconciled to the saint, and attacked Ibrahim Shah—and, having put him to death, seized on his Government. The old man Ganesh then confined his son and seized on the whole kingdom. After having been 4 years in confinement, Jalāluddīn recovered the Government, and compelled the Hindus to become Muḥammadans, but many of them fled to Kamrup. He governed 7 years and was succeeded by his son Ahmed Shah who reigned 3 years. He was destroyed by two of his nobles, Sadi Khan and Nasar Khan, the latter of whom was made King and erected many buildings at Gaur to which he seems to have transferred the royal residence. He governed 27 years”.

A comparison of this account with that of the *Riyyāz*, the author of which also probably drew, in the second half of the 18th century, on local traditions, enables us to add the following information regarding Raja Ganes (or Kāns), and the persons connected with him during his period of influence over mediæval Bengal politics.

(1) *Sultān Ghiyāsuddīn* was a contemporary and fellow student of Makhdūm Nūr Qutbu-l-‘Ālam, and was treacherously killed by the stratagems of Raja Kāns, a Zemindar of Bhaturia. According to one account, his reign lasted 16 years, 5 months, and 3 days.

(2) *Saifuddīn*, his son, was placed on the throne by the nobles and generals with the title *Sultānus-Salātīn*. According to one account, he reigned for 3 years, 7 months, and 5 days.

(3) Saifuddīn was followed by Shamsuddīn who, some say, was only an adopted son of Saifuddīn and that his real name was *Shihābuddīn*. He reigned for 3 years, 4 months, and 6 days. Raja Kāns (who had by that time become very powerful) attacking him, slew him, and usurped the throne.

(4) *Raja Kāns* then subjugated the whole of Bengal and oppressed the Muḥammadans. His aim was to extirpate Islam

from his dominions. Owing to the murder, by the Raja, of Shaikh Badru-l-Islam, father of Shaikh Muinuddin 'Abbās, Shaikh Nūr Qutbu-l-'Ālam invited Sultān Ibrāhīm of Jaunpur to invade Bengal and rescue the Musalmans. When the Sultān reached Firūzpur (probably old Māldah), the Raja became alarmed and even at first consented to the demand of Shaikh Nūr that, as the price of his intercession with Sultān Ibrāhīm, the Raja should become a Muḥammadan. This displeased the Raja's wife, whereupon Raja Kāns offered his son *Jadu* (whom Ferishta calls Jitmāl) for conversion, saying 'I have become old and desire to retire from the world. You may convert to Islam this son of mine, and then bestow on him the kingdom of Bengal'. *Jadu* was accordingly proclaimed King of Bengal under the title Jalāluddīn. When however Sultān Ibrāhīm had retired from Bengal, *Raja Kāns* dispossessed his son Sultān Jalāluddīn and himself re-ascended the throne. He also endeavoured unsuccessfully to reconvert Jalāluddīn to Hinduism, and renewed his persecution of the Muḥammadans. The Raja then died after murdering Shaikh Anwar, the son of Shaikh Nūr Qutbu-l-'Ālam, at Sunārgaon. The author of the *Riyāz* adds that, according to some accounts, Jalāluddīn who was in prison, leagued with the Raja's servants and slew him, after Raja Kāns had reigned for 7 years. *Jalāluddīn* then again ascended the throne and persecuted the Hindus. He continued to live at Pandua, but the city of Gaur began to be repopulated in his time, and he is even said to have removed the capital back there. He was buried at Pandua, after reigning 17 years.

(5) Jalāluddīn was succeeded by his son Ahmad who was a bloodthirsty tyrant. After he had reigned for 16 (or, 18) years, Shādi Khān and Nāsir Khān, two of his slaves who held the rank of nobles, slew him. The assassins fell out, and Nāsir Khān, after slaying Shādi Khān, placed himself on the throne. He was however slain by the nobles of Ahmad Shāh, either the same day or after 7 days, and one of the (? great)-grandsons of Sultān Shamsuddīn (Ilyās) was then raised to the throne with the title of Nāsir Shāh [*i.e.*, Nāsiruddīn Mahmūd Shāh]. The fort at Gaur was erected by this King who reigned for either 27 or 32 years.

I have purposely omitted to mention any of the dates given in the *Riyāz* for, as Blochman was the first to point out in the seventies of the last century, they are all wrong. Those given by Francklin are nearer the mark, but it is better to trust to the evidence of coins, as giving the fullest information not only as regards dates, but also mint names. It was by this means that Mr. Nalini Kanta Bhattasali (Curator of the Dacca Museum, who made a preliminary survey of this period when describing in 1922 the Ketun find in his 'Coins and Chronology of the Early Independent Sultāns of Bengal') was able to prove the existence

of a previously unrecorded King of Bengal, 'Alāuddīn Firūz, and to indicate some of the mistaken readings in the section of the Indian Museum Catalogue that deals with the coinage of Ghiyās-uddīn. I quote below the dates found on coins in my own cabinet, supplementing them where necessary by references to coins in the Indian Museum or elsewhere (given in square brackets).

Kings.	Hijri (dates on coins).
1. Sikandar	[759-787].
2. Ghiyāsuddīn 'Azam (son of No. 1) ..	[793-812], 811, 812 (?), 813.
3. Saifuddīn Hamzah (son of No. 2) ..	814 and 815.
4. Shihābuddīn Bāyazīd	816 and 817.
5. 'Alāuddīn Firūz (son of No. 4) ..	817.
6. Jalāluddīn Muhammad	818, 819, 821-3, [824, 828], 831 (?), [834].
7. Shamsuddīn Ahmad (Probably reigned from 835-846).	[836].
8. Nāsiruddīn Mahmūd	[848-862].

I have verified by personal inspection that the date 812 given on I.M.C. No. 89 for a coin of Shihābuddīn is probably a misreading for 814, while that of 840 (I.M.S. No. 104) for a coin of Jalāluddīn is also extremely doubtful, so that no discrepancy seems to occur in the coin dates. The only actual gap in the dates between 810 and 824 is in the year 820, and this is completely covered by the coins of the two kings we have taken up for consideration, as the coins of Danujmarddana were struck in *Saka* 1339 and 1340 (819 and 820 A.H.) while those of Mahendra that have, up to now, been reported were all struck in *Saka* 1340, except for one in my own cabinet (*vide* No. 8 of Plate II) where the unit is certainly not 0 and may be 1.

In dealing with the history of these two Hindu Kings one might expect to find that however short their reigns may have been, they would have received considerable attention in Bengali literature composed by Hindus. It is rather surprising to find, on the contrary, that Mahendra is not mentioned at all, while elaborate search has only produced two references to Danujmarddana. One of these occurs in the autobiography of the poet Krittibās and mentions that his great-great-grandfather, Narasinha Ojhā, settled at Phuliā (very close to Santipur in the present district of Nadiā) and became Minister to a King called Danuj: the other quoted from the *Laghutoshini* of Jiva Goswāmi (nephew of Rūp and Sanātan, the Ministers of Husain Shah in the first quarter of the 16th century) states that Jiva Goswāmi's great-great-grandfather, Padmabha, settled at Naihati and was honoured by King Danujmarddana. There is a similar silence in Bengali literature even about Raja Ganes—with again very few references—only three, all in Vaishnava works. In the *Prem*

Bilās of Nityānanda Dās, one of the disciples of Chaitanya, who lived from 1485–1528 A.D.—it is stated that one Narasinha Narial came from Sylhet to the presence of Raja Ganes and was honoured by him. The second reference occurs in the *Advaita Prakāś* of Īsan Nāgar, where the important statement is made that it was by the advice of Narasinha Narial of the Brahmin family of Aru Ojhā of Laur, Sylhet, and great-great-grandfather of Advaita of Santipur (who was himself born in 1434 A.D.) that Raja Ganes was able to become King of Gaur. Finally, in the *Balvalilā Sutra* of Krishnadās (who, before he was converted to Vaishnavism, was Raja Dibya Sinha of Laur), it is stated that Raja Ganes, having invited Narasinha Narial to his court at Dinājpur, made him his Minister, and that it was by the latter's good counsel that Raja Ganes was victorious over the *Yavana* (Muhammadan) King of Gaur and became undisputed monarch of Gaur in 1329 *Saka* (1407 A.D.). It must be noted however that as the last-named book has only recently been printed (from a corrected copy of a defective MS. which cannot now be traced), the statements made in it—especially that about the Raja having had his court at Dinājpur—cannot be unhesitatingly accepted.

From the references just given, it is evident that little or no light is thrown on the question as to who King Danujmarddana was, and that though it may be inferred that Danujmarddana probably lived at about the same time as Raja Ganes, no suggestion even is made that Raja Ganes was identical with King Danujmarddana. The only certain information is that Raja Ganes became King of Gaur possibly about 1407 A.D. by conquering and slaying one or more Muhammadan Bādshāhs of Gaur. This is exactly what is stated by the author of the *Riyāz* and we are therefore driven to the conclusion that in clearing up this obscure period of Bengali history, we have to rely entirely on the statements of Muhammadan authorities (chiefly those already quoted), as well as on any evidence we can gather from the coins of Danujmarddana, Mahendra, and their immediate predecessors and successors.

The only other important point that has not previously been mentioned is that we know from Muhammadan sources that the Saint Nūr Qutbu-l-Ālam, who was instrumental in inducing Sulṭān Ibrāhīm of Jaunpur to retire from Bengal after the conversion of Jadu, Raja Ganes's son, to Muhammadanism, died in 818 A.H. (=March 13th, 1415 to February 28th, 1416).

It is hardly credible that Raja Ganes would have acted in the way that he is reported then to have done, *viz.*, imprisoning son and, after again seizing the sovereignty of Bengal, recommencing to oppress the Muhammadans, if the Saint had still been alive. We may therefore infer from the facts (a) that many coins of Jalāluddīn are known to have been minted in 818 A.H., (b) that only a very few coins of Jalāluddīn, dated

(2) The only mints known up to now as having been active in Saifuddīn's reign are Firūzābād and Mu'azzamābād.

(3) In addition to these last mentioned mints, Shihābuddin also issued coins from Satgānw, as well as, possibly, from Chatgānw (Chittagong).

(4) 'Alāuddīn, and Jalāluddīn (during his first period as King) may only have struck coins from Firūzābād.

(5) During the brief reigns of Danujmarddana and Mahendra the name Firūzābād disappears, being replaced by the Hindu name Pāndūnagar. The existence of coins from both Sunārgānw and Chātigrām (Chittagong) shows that the whole of Eastern Bengal was under the control of Danujmarddana, and this was probably also the case with Mahendra when he succeeded to the throne.

(6) On the return of Jalāluddīn to the throne, the name Pāndūnagar was replaced at once by Firūzābād. Coinage also reappeared from Satgānw and Mu'azzamābād. Possibly the Chittagong mint also occasionally struck coins.

Summing up all the available facts, it appears therefore that the true history of Bengal during the first quarter of the 9th century A.H. was as follows: Raja Ganes, who was zemindar of Bhaturia,¹ a tract of country which lay on either side of the Atrai River (i.e., the South East corner of the present Rajshāhi Division) began to acquire considerable influence over the affairs of Bengal during the late years of Sultān Ghiyāsuddīn—say 800–813 A.H. (1397–1410 A.D.), and, according to the *Riyāz* he treacherously killed this king. The nobles then placed Ghiyāsuddīn's son, Saifuddīn Hamzah, on the throne. The coins of this King show that he reigned for at least 2 years (814 and 815 A.H.) and that he assumed the title *As-Sultān-us-Salātīn Sikandar ath thāni* 'King of Kings, the Second Alexander'. Saifuddīn was succeeded by Shihābuddin Bāyazīd, who was either the slave or adopted son of Saifuddīn. Shihābuddin remained on the throne for perhaps 2 years (816 and part of 817 A.H.) and may have been slain by Raja Ganes, who then tried to occupy the throne. From the fact however that Shihābuddin was succeeded by his son 'Alāuddīn Firūz and the absence of any coins of Raja Ganes, struck in his own name, it is clear there was a considerable amount of active resistance to the Raja's plans from the Muḥammadan nobles and priests. This finally led to Sultān Ibrāhīm of Jaunpur being requested by the Saint Nūr Qutbul 'Ālam of Pandua to invade Bengal, and Raja Ganes was forced to consent to his own son Jadu being converted to Muḥammadanism and placed on the throne of Bengal with the title of Jalāluddīn Muḥammad early in 818

¹ The correct spelling is probably Bhāduria, as Raja Ganes seems to have belonged to the Bhāduri family of Varendra Brahmins.

A.H., in place of 'Alāuddīn Firūz who had probably been killed by Raja Ganes soon after his accession to the throne in the previous year. Jalāluddīn continued as King throughout 818 and for part of 819 A.H. but, owing to the death of Nūr Qutbu-l-'Ālam in 818 A.H., Raja Ganes deposed and imprisoned his son in 819 (1416 A.D.) after an ineffectual attempt to reconvert him to Hinduism. Raja Ganes then ascended the throne, taking the title of Danujmarddana, but died in the next year. As already noted, he struck coins dated *Saka* 1339 and 1340 (= 8½ months of 1416, the whole of 1417, and 3½ months of 1418) from Pān-dūnagar (Firūzābād—the present Pandua), Sunārgānw, and Chāt-gānw (Chittagong). He was followed in the same *Saka* year 1340 (April 1417 to April 1418) by a King called Mahendra who may also have continued to rule for some portion of the following *Saka* year, 1341 : but, meantime, Jalāluddīn, who may have had some hand in his father's death, had escaped from prison, and succeeded in 821 A.H. (= 1418 A.D.) in firmly re-establishing himself on the throne which he continued to occupy until probably 835 A.H. (i.e., 1431 A.H.) when he was in turn succeeded on the throne of Bengal by his son Shamsuddīn Ahmad Shāh. The last named king seems to have been a less satisfactory ruler than his father, and, after reigning for 10 or 11 years, he was assassinated. A brief period of confusion ensued, after which a scion of the family of Ilyās Shāh became King with the title of Nāsiruddīn Maḥmūd and fully restored the glory of his great-great-grandfather's times. Nāsiruddīn Maḥmūd resided at Gaur and it is probably he who built the Fort there.

A few words may be said in conclusion regarding the identity of the King Mahendra who followed Danujmarddana. This King does not mention who his father was on his coins, so that he might not even have been connected with Raja Ganes' family at all. The only clue is given in the history of Ferishta, who, unlike other Muḥammadan historians, seems to have gathered that some people at all events considered that Raja Ganes was not so anti-Muḥammadan as the accounts previously quoted try to make out. He even states that when Raja Kāns died, certain Muḥammadans claimed the Raja was a Musalman and wished to bury him with Islamic rites. Ferishta then goes on to give the following account of Jalāluddīn's (second) accession: "Jit-mall, after the death of his father, summoned the nobles and all the other pillars of the State and said: 'The truth of the Islamic religion is clear to me and I have no alternative but to accept it. If you accept me and do not wish to stray away from my sovereignty, I will place my feet on this honourable throne: otherwise let my *younger brother* be King and excuse me.' All the officials unanimously declared: 'We follow the King in worldly affairs and have nothing to do with religion'. Then Jitmall having summoned the learned men and elite of



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819 A.H., are known; and (c) that there is no further mention of the Saint but only of his son Shaikh Anwar whom Raja Ganes murdered; that afterwards, probably, in consequence of the death of Nūr Qutbu-l-Ālam in 818 A.H., Raja Ganes ejected his son from the throne early in 819 A.H. (say about the summer of 1416 A.D.) and seized the kingdom of Bengal.

Now it is precisely at this time that the coins of Danujmarddana dated *Saka* 1339 begin. Moreover, as Mr. N. K. Bhattasali has pointed out, the very title of the King Danujmarddana means 'Destroyer of the Demons'—is in accordance with the behaviour of Raja Ganes if we take the name to be a reference to Muḥammadans. The following summary of the dates found on the coins of this period also shows how completely they fit in with the story as given by the Muḥammadan historians.

Kings.	Date A.H. (or <i>Saka</i>).	Equivalent date A.D.
'Alāuddīn Fīrūz	817 (very few coins)	March 23rd, 1414—March 12th, 1415.
Jalāluddīn	818 (numerous coins)	March 13th, 1415—Feb. 28th, 1416.
Do.	819 (very few coins)	March 1st, 1416—Feb. 17th, 1417.
Do.	[No coins of 820 known]	Feb. 18th, 1417—Feb. 7th, 1418.
Danujmarddana	<i>Saka</i> 1339	Middle of April, 1416 to middle of April, 1417.
Do.	Do. 1340	April 1417—April, 1418.
Mahendra	Do. 1340	
Do.	Do. 1341 (?) 2-1 coins	April, 1418—April, 1419.
Jalāluddīn	821 (onwards: numerous coins of each of the years 821, 822, and 823)	Feb. 8th, 1418—Jan. 27th, 1419.

A brief study of the table will show practically conclusively that Mr. N. K. Bhattasali's thesis that Raja Ganes and Danujmarddana were one and the same king is correct, and that the title of Danujmarddana was deliberately assumed by Raja Ganes as a visible sign that he had formally renounced his previous obedience to the orders of a Muḥammadan Saint.

The extent of the territory controlled by the Kings of Bengal from the beginning of Ghiyāsuddīn's 'Azam's reign to the end of that of Jalāluddīn will be seen from the annexed Table A, giving the names of their mints from coins, chiefly in my own cabinet. From this table the following facts can be gathered.

(1) Ghiyāsuddīn minted chiefly from Fīrūzābād (Pandua), but coins belonging to him are also known from Mu'azzamābād (Eastern Bengal) and Satgānw (Western Bengal).

(2) The only mints known up to now as having been active in Saifuddīn's reign are Firūzābād and Mu'azzamābād.

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Lakhnauti, uttered the *Kalimah*, and having assumed the title of Jalāluddīn, ascended the throne ”.

Failing any definite proof of the identity of Mahendra, it seems reasonable to read between the lines of Ferishta's account and identify Mahendra with the younger brother of Jadu, Jalāluddīn. Mahendra had probably already been placed on the throne in succession to Raja Ganes by the Hindus, while Jalāluddīn would be addressing chiefly a Muḥammadan audience who were already prepared to support him. We can easily picture the sequel: pursuit and ultimate death of Mahendra and thereafter undisturbed rule over the whole of Bengal for Jalāluddīn.

H. E. STAPLETON.

299. A BRIEF HISTORY AND DESCRIPTION OF HIS MAJESTY'S
MINT, CALCUTTA.

In Captain Henderson's Chronological Table published as an Appendix to the Journal of the Asiatic Society in 1836, it is stated that the English established a Mint in Calcutta in 1757, and the first rupee was struck on the 29th August of that year.

The right to establish a Mint was one of the stipulations of the Treaty with Sirāj-ud-Daula, dated 7th February, 1757.

Thurston, however, gives the date of the Mint as 1759 or 1760, when a "PARWANA" was obtained.

Possibly the right of Minting was in dispute for some time.

There is a reference in a despatch to the Court of Directors in 1753 mentioning the need for the utmost secrecy regarding the proposed Mint and the question of presents totalling two lakhs of rupees necessary to arrange matters is also referred to.

The Reverend Rogers Ruding in Vol. IV of his Annals of the Coinage of Britain published in 1819, gives the first mention of a Mint in Calcutta as occurring in June, 1766.

The site of this first Mint is not known. The coins produced were crude specimens struck between dies with a hammer and were really counterfeits of the Moghul coins then in circulation. With such primitive methods no special building would be necessary and possibly none was built.

THE SECOND CALCUTTA MINT.

In 1790 machinery was sent out from England and coins of modern type with milled edges were struck. This machinery was erected in buildings on the site of Gillett's ship building establishment.

This site was taken over in 1833 by the Stamp and Stationery Committee. It is probably the land now occupied by the Stationery Office between Strand Road and Church Lane.

MACHINERY OF THE SECOND CALCUTTA MINT.

Some details of the machinery used can be gleaned from a report, dated 1819, from the Mint Committee recommending that a new Mint should be built and that new machinery of modern design driven by steam should be obtained from England.

It is stated that the Rolling Mill was then worked by manual labour, forty coolies being employed to turn the Mill. Their wages were Rs. 5 per mensem. Four reliefs were necessary in order to roll the metal required to coin one lakh of rupees in 12 hours. It is not surprising that the working of the Mill was

irregular and great variation occurred in the thickness of the fillets or straps, resulting in many rejected coins.

It is interesting to compare this Mill with the existing Rolling Mills driven by Electric power with motors of 150 horsepower and each capable of rolling metal for 3 lakhs of rupees in seven hours.

Melting was done in a large open fire of charcoal in which many small pots containing only 1,000 tolas each were placed. There was apparently no chimney.

The heat and fumes were so bad that it was impossible to supervise the work of the melters, who were thus able to abstract silver and substitute some other metal with impunity. Melters were paid Rs. 10 per mensem and found a security of Rs. 2,000. There is evidence to show that the job of Melter was a lucrative one in those days.

ROLL OF MINT MASTERS.

The roll of Mint Masters dates from 1792. At some time prior to this date Robert Harris was Master and in a recent issue of "*Bengal Past and Present*," there is mention of a tombstone in Park Street cemetery dated 1781, to the memory of a son of Herbert Harris, Mint Master.

The most eminent name in the roll is that of William Nairn Forbes of the Bengal Engineers.

Forbes as a subaltern in December, 1819, was deputed to England to superintend the manufacture of the machinery for the new Calcutta Mint. He returned to Calcutta in 1823, and the foundation stone of the present Silver Mint was laid on 31st March, 1824.

Lt. Forbes was the Architect and first Master, and he continued as Master until his death which occurred at sea near Aden on 1st May, 1855. He had by then risen to the rank of Major-General. Major-General Forbes was also the architect of St. Paul's Cathedral, Calcutta, and there are still in the Mint some fine old engravings of various English Cathedrals which must have been obtained by him for guidance in the design of the Calcutta Cathedral. There are also some rough sketches and preliminary designs.

General Forbes must have been a very remarkable man. He was both a fine architect and a highly skilled mechanical engineer.

One can understand that the difficulties he had to contend with both in the building of the Mint and in the erection and setting to work of the complicated machinery were considerable.

The Court of Directors of the East India Company fully recognised his attainments. They placed a marble bust of him suitably inscribed in the Mint and also erected a memorial to his memory in the Cathedral.

Another eminent master was Col. Richard Baird Smith, C.B., who was Chief Engineer of the Army of the siege of Delhi.

Among the Assay Masters occur the names of James Prinsep in whose honour Prinsep's Ghat was erected and Dr. Busted, author of "Echoes of Old Calcutta".

THE PRESENT MINT.

The New Mint was opened for coinage on 1st August, 1829.

The façade of the Mint facing Strand Road is supposed to be a copy on a smaller scale of the Temple of Minerva at Athens. This façade conceals the ugly utilitarian buildings lying behind it.

Owing to the treacherous soil the old Mint was in a ruinous condition with roofs cracked and walls leaning over. The Superintending Engineer of the Public Works Department reported that the buildings could not be repaired but would have to be entirely rebuilt if used for the new machinery. Forbes took care to guard against this danger in the New Mint.

Very massive foundations were laid and they go down 26 feet below ground level so that there is nearly as much brickwork below ground as above.

In 1826 an army was being formed for the siege of Bhurtpore. There are in the records several letters from Forbes begging to be allowed to join this Army. He was eventually permitted to do so and was present at the siege and capture of the fortress.

During Forbes' absence on active service someone in authority desired to inspect the progress of the building of the Mint. He was alarmed to find nothing showing above ground. On his return from the siege, Forbes was called upon for an explanation which he no doubt furnished without difficulty.

Besides the very solid foundations for the building and for the heavy machinery, an enormous quantity of masonry was required for the subterranean tunnels for the condensing water of the primitive steam engines and flues for the chimneys. Only recently difficulties have been experienced in laying foundations for new machinery owing to the unsuspected presence of one of these tunnels.

The buildings cost 11 lakhs of rupees and the machinery sufficient to coin two lakhs of silver pieces per diem cost Rs. 13 lakhs.

BOULTON AND WATT'S COINING MACHINERY.

The machinery was similar to that which had recently been installed, after much opposition, at the Royal Mint, London. It had been perfected by Boulton and Watt at Soho, Birmingham,

prior to 1788 and had been used for copper coin for France and the Colony of Bermuda and in 1794 for coinage for the Madras Presidency.

It was not, however, until 1797 that Boulton obtained an order for copper coinage for Great Britain. This coinage was such a success that Boulton was employed to erect the new Mint on Tower Hill and the machinery for it was manufactured at Soho, Birmingham. Thereafter, he supplied similar machinery to the Royal Mints of Russia, Spain, and Denmark and subsequently for Mexico, Calcutta, and Bombay.

The Coining Presses supplied to Calcutta in 1829 and similar ones supplied in 1860 are still in use without material alterations and have given remarkable service. Those supplied to Bombay are also still in use.

Though they occupy much space, make a terrific noise, and consume much power they are still considered the best for turning out large quantities of heavy coin such as the rupee under the conditions obtaining in India.

Several attempts have been made to replace them by modern presses but hitherto without success.

Boulton may be regarded as the father of modern Minting. With the assistance of Watt he first applied steam to the working of coining machinery.

The story of his life, his wonderful mechanical genius, his perseverance in the face of enormous difficulties and the opposition of his contemporaries is of absorbing interest to any one connected with the minting of coin.

There is in the Mint a fine collection of medals and coins struck at Soho, Birmingham, between 1780-1820.

For artistic design, skilful handicraft, and perfection of execution they have rarely been surpassed.

This collection was presented to the Mint in 1855 by Captain Forbes, R.E., believed to have been the son of Major-General Forbes.

It is probable that the medals and coins were presented to General Forbes by the firm of Boulton and Watt as samples of what their machinery could produce.

SILVER COINAGE RECORDS.

The records of the silver coinage executed at the Calcutta Mint date from 1801-02, in which year Rs. 30 lakhs Sicca and gold coins valued at nearly one lakh of rupees were struck.

These records show a fairly steady yearly output up to 1835, the largest being in 1819-20 when 263 lakhs Sicca were coined.

There is no marked increase following the completion of the new Mint. This is explained by the fact that it was employed for sometime chiefly on pice. It was not till 1835 when the

William IV coins of English design were ordered that any marked increase of output appears.

NEW COPPER MINT.

In 1860 a separate Mint intended exclusively for the coinage of copper was built to the north of the Silver Mint. The Silver Mint is now capable of giving an output of Rs. 6 lakhs in a working day of 7 hours and in the Copper Mint five lakhs pieces of bronze or cupro-nickel can be struck.

The two Mints are self-contained, each comprising Melting, Laminating and Cutting, Annealing and Stamping and Packing Departments.

The Silver Mint has in addition an Automatic Weighing Department for weighing of blanks before they are struck.

The Bullion and General Offices, Workshops and Stores are common to the two Mints.

RECORD COINAGE.

In the year 1918-19 nearly 546 million coins were struck in the Calcutta Mint and on one day alone the output exceeded 18 lakhs rupees, besides small coins.

This is nearly double the record annual output of the Royal Mint in London and is believed to exceed that of any Mint in the world.

At the present time, though Calcutta is responsible for supplying the whole coinage needs of India, the Silver Mint is almost disused but the Copper Mint is fully employed and was recently working on overtime to an output of $7\frac{1}{2}$ lakhs pieces daily.

COINS STRUCK IN THE CALCUTTA MINT.

In addition to the Government of India coins which are familiar to all, there have been regular issues of coinage up to recent years from the Calcutta Mint for the Straits Settlements and Ceylon and occasionally of British Dollars for Hongkong.

Coins have also been struck in the past for the Indian States of Dewās, Bikānir, and Dhār, Sailāna and Puddokotai. The latter's coin is the Aman Cash, the smallest coin struck in the Mint, orders for which are still received periodically. Other coins include the Portuguese India One Rupee, $\frac{1}{2}$ Tanga and $\frac{1}{4}$ Tanga of 1881-1886, Pice for British East Africa in 1888, coins for the Sultan of Lahej near Aden in 1895 and Penny and Half-penny pieces for the Australian Government during the Great War.

An interesting recent issue was that of half-rupee size coins for Bhutān. The Mint is now engaged on a new series of coins for Udaipūr.

MINT RECORDS.

The records of the Mint date from 1792. The old records are in copper plate manuscript and the letters are generally in perfect English, but would now perhaps be considered somewhat pedantic.

There is much correspondence regarding escorts for treasure by country boats on the river. There are frequent references to disease and death showing the unhealthiness of Calcutta in the early days.

Petitions for more pay were then, as now, common.

Estimates for the machinery for the Benares and Saugor Mints are to be found in the records of 1820. This machinery was supplied by a well-known Engineering firm, still flourishing in Calcutta.

The records for the years 1857-58 do not contain any interesting references to the Mutiny. Two Mint Assistants were given leave to join some unit known as the Yeomanry Cavalry but they were subsequently not permitted to retain a lien on their appointments.

There is a letter dated 31st August, 1853, referring to the transfer of India from the East India Company to the Crown and the necessity for a new device to be stamped on the coins. This must have led up to the issue of the 1862 coins.

In those days the date of coins was not changed yearly as at present. This was probably due to there being no skilled engravers available and if any changes were made, new matrices would have had to be obtained from England.

It was not till 1874 that a yearly change of dates was instituted. Rupees prior to 1874 are dated 1835, 1840, or 1862 only.

Prior to the building of the Copper Mint, large quantities of copper coins were imported from England.

300 tons of pice struck by Ralph Heaton & Sons, Birmingham, were sent out in 1857.

54 lakhs of blanks were lost in the wreck of the "Rajah," off Diamond Point in the same year.

There are many references in the records to stores and coin lost in wrecks.

MEDALS AND DECORATIONS.

An important duty of the Mint is the manufacture of medals and decorations.

The earliest medal of which the dies are in the Mint is that for Service on the Island of Ceylon 1795-96.

Other early medals are Seringāpatam 1799, Egypt 1801, Isle of France 1809-10, Java 1811, Nepal 1814-16, Coorg 1837 and a series of Afghānistān Medals of 1839-42.

The first India General Service Medal is dated 1854 and a total number of 20 clasps was issued with this. There were

four later designs of this medal and further clasps to date bring the total to 38, the latest being "Waziristān 1925".

In connection with the Great War, the 1914-15 Bronze Star and the British War Medal were struck in the Calcutta Mint in large numbers.

The familiar Indian Military and Civil decorations, 18 in number, are struck in the Mint every year.

Many other medals are struck for Universities, Colleges, and other institutions.

Other interesting medals include one commemorating the opening of the East Indian Railway to Rājmahāl in 1860 and the MacGregor Memorial Medal of the United Service Institution of India dated 1887 and showing types of the British and Indian Armies of that period.

The latest medal of interest is that of the Simla Fine Arts Society, the design of which is a copy of the figure of a bull taken from a seal which is the oldest known engraving in India and was found at Mohenjo Daro.

The thrones used by Their Majesties the King and Queen at the Delhi Durbar were cast in silver at the Calcutta Mint, 96,000 old rupees being melted for this purpose.

Plaques for the Durbar Monument at Delhi and several Memorial Tablets of the Great War were also prepared in the Mint.

WEIGHTS AND MEASURES.

One of the duties of the Mint is the checking for the public of weights and measures. There is at present no standard of weights and measures enforced throughout India, as is the case in other countries. The reason for this is that there is too wide a variation in standards still in common use.

The Railway standard of weights is, however, generally accepted and many Municipalities now maintain standard weights for checking weights used in their area.

Sets of standard weights are supplied by the Mint to such Municipalities as require them and these are returned periodically to the Mint for check.

Many weights are also sent by the public to the Mint for check.

The primary standards which are in the custody of the Mint consist of a 30 tola piece, a 100 grammes piece and a troy ounce—all made of Iridio-platinum. These were obtained from England and are of great accuracy.

The Mint also possesses complete sets of Reference and Working Standards for tola and avoirdupois weights which are periodically checked by the Assay Department.

The Calcutta Assay Office was closed as a measure of retrenchment in 1923 and since then the Mint is no longer able to adjust weights to the accuracy of the Reference Standards.

Working Standards are used and are sufficiently accurate for all general purpose. All assay work for the Calcutta Mint is now done at the Bombay Assay Office.

COUNTERFEIT COINS.

While the Mint is primarily concerned with the minting of genuine coin, it has much work in connection with the prevention of counterfeiting.

With a large percentage of illiteracy in the population and with many districts remote from Police or other supervision the counterfeiter finds his nefarious trade a profitable one.

There are criminal tribes who have been known as counterfeiters since Moghul days.

The Mint is constantly called upon to furnish expert evidence in cases connected with the counterfeiting of coins.

There is in the Mint Museum a Show-case of counterfeit coins and implements used by counterfeiters. It bears the inscription "RADIX ENIM OMNIUM MALORUM EST CUPIDITAS".

H. STAGG.

300. RARE MUGHAL COINS IN THE STATE MUSEUM (HĀIDAR-
ĀBĀD, DECCAN).

Mr. Ghulām Yazdāni, Director of the Archæological Department, H.E.H. the Nizam's Government, has kindly asked me to arrange and catalogue the coins of the Haidarābād Museum. While examining them, I have come across certain issues which may interest numismatists. I propose to describe some which relate to new mints or throw fresh light on the history of the period. I will first describe a new Bahmani coin and then Mughal coins according to their mints.

BAHMANI COIN.

Mint Faṭḥābād.

This coin adds one more to the number of the Bahmani Mints hitherto published.

Obverse.

سلطان
العهد و الزمان
حامى ملة رسول
الرحمن

Reverse.

ابو المظفر
محمد شاه بن
بهمن شاه السلطان (sic)
ضرب | حضرت | فتحآباد | ٧٦٤



Aḥsanābād (GULBARGAH).

Mr. R. B. Whitehead in his Mint Notes observes: "From 1115 to the end of the reign, the Bahmani name of the town (*i.e.*, Aḥsanābād) was revived on both gold and silver coins". The three Rupees, in the Cabinet of the Haidarābād Museum stamped below, prove that the name was revived as early as 1112 A.H. (if not earlier) at least on the silver coins. The following is the reading:—

<i>Obverse.</i>	<i>Reverse.</i>
عالم (گیر)	مانوس
۱۱۱۲	میمنت
اورنگ زیب	۴۵
زہ چو بدر منیر	سنہ جلوس
مسکے	ضر
در جہان	[۱] حسن آباد

Mint Bijāpūr.

I will next take a set of Mughal coins from the Bijāpūr Mint. In N.S. XXX, Mr. C. J. Brown observes that he has not come across any coins from the Bijāpūr mint dating between the 24th and 30th Regnal years of Aurangzeb. The undermentioned is one of the 26th Regnal year.

It will be interesting to note that the Hijri year 1091 was stamped not only on coins of the 23rd and 24th Regnal years, but also on those of 26th Regnal year, of which 2 specimens are now in our Cabinet. The following is the reading of the coins:—

<i>Obverse.</i>	<i>Reverse.</i>
عالم گیر	مانوس
۱۰۹۱	میمنت
اورنگ زیب	۲۶
مسکے	سنہ جلوس
زہ چو بدر منیر	ضر
مسکے	بیجاپور
در جہان	

I may here add that the reading *مجلوس* for *جلوس* mentioned in the N.S. XXX, page 265, is not to be found on a coin of the 23rd Regnal year in the Museum of Haidarābād.

<i>Obverse.</i>	<i>Reverse.</i>
عالم گیر	مانوس
۱۰۹۱	میمنت
اورنگ زیب	۲۳
مسکے	سنہ جلوس
زہ چو بدر منیر	ضر
مسکے	بیجاپور
در جہان	



The earliest coin known with the *Dāru-z-zafar* epithet is said to be of the 31st Regnal year, with the Hijri date missing (N.S. XXX, page 265). The undermentioned is a coin of 1097 A.H. and of the 30th Regnal year:—

Obverse.	Reverse.
عالم گیر	جلوس
۱۰۹۷	میمنت
اورنگ زیب	مانوس دار الظفر
مس	۳۰
(ز) د چو بدر منیر	بیجاپور سنہ
مس	ضر
در جہان	

There is a unique coin of this very mint of the 42nd and 43rd or 44th Regnal year of Aurangzeb which has the word "Nāik" below 'Zarb' and before the epithet *Dāru-z-zafar*. It might have been struck by one of the Nāik feudatories of the Mughal Emperors. The coin reads as follows:—

Obverse.	Reverse.
عالم گیر	مانوس
اورنگ زیب	۴۲
مس	سنہ جلوس
زد چو بدر منیر	ضر
مس	نائک دار الظفر
در جہان	بیجاپور



Mr. R. B. Whitehead, in his mint notes, has stated that "After Farrukhsiyar the mint Bijāpūr disappears from the Mughal series". The following rupee of Muḥammad Shāh from the same mint shows that it was active even after Farrukhsiyar:—

a
D*Obverse.*

محمد شا

باد غازي

ارا

Reverse.

بلو

ميمنت مالو

سنه ۱۲

ظفر

بيجاپور

*Bareli.*

Mr. R. B. Whitehead observes :—

Coin No. 1626 is dated 1100, but a rupee earlier by two is in the Cabinet of Mr. H. Nelson Wright (Mint Notes).

The Haidarābād Museum cabinet has a unique rupee of A.H.—29 R.Y., one of the R.Y. 29 and one of 1098 A.H. 7.

Obverse.

عالم گیر

اورنگ زیب

۱۰۹۷

مس

زد چو بدر منیر

مس

در جهان

Reverse.

مانوس

۲۹

سنه جلوس

ضر

بريلي

Weight.*Phondā.*

coin of Aurangzeb from the mint Phondā, if my reading is correct, adds one more name to the list of Mughal Mints. On showing the coin to Mr. Yazdāni, he advised me to look somewhere in the Deccan. I have been able to find it in the Deccan.

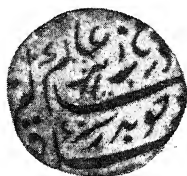
It is a very old place and had a very strong fort during the time of the 'Adil Shāhis, Mughals and Marāthās. It is now in the possession of the Portuguese. The following is my reading:—

Obverse.

اورنگ زیب عالم گیر
 —————
 [ز] د چو بدر منیر
 —————
 سک

Reverse.

سنہ ۱۴۳
 مانوس
 میمنت
 جلوس پہوندا
 —————
 ک

*Jitpūr.*

A coin of Aḥmad Shāh from Jitpūr, if my reading is correct, adds one more to the list of Mughal Mints. The following is an extract from Imperial Gazetteer of India, Vol. XIV, page 102.

"Fortified town in the State of same name, Kāthiāwār, Bombay, situated in 20° 45' N. and 70° 48' E. on the western bank of Bhādar river."

It reads thus:—

Obverse.

احمد شاه بهادر
 —————
 باد شا غاز
 —————
 سکہ مبار

Reverse.

مانوس
 میمنت
 سنہ جلوس
 —————
 ضرب
 جیت پور

*Kovilkinda.*

A coin most probably of 'Alamgīr II adds one more name to the list of Mughal Mints. Kovilkinda is an old place with

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a fort in the Maḥbūbnagar District, of H.E.H the Nizam's Dominions.

The following is a reading of the coin :—

Obverse.

عالمگیر ثانی

فصل ...

Reverse.

مانوس

میمنت

جلوس احد

کویلکند [۱]



KHWĀJA MUHAMMAD AHMAD.

301. RARE MUGHAL COINS IN MY CABINET.

(1) *A mohar of Kām Bakḥsh, 1119—1, Nuṣratābād Mint.*

A rupee of Kām Bakḥsh is known of this mint, but this is the first time that a mohar has come to light. It is also the earliest known gold coin.

Obverse.	Reverse.
کام ش دین	مانوس
س	میمنت
ورشد و ما	۲۱
سکه ۱۹	سنه جلوس با
دکن زد	ضرب
	ت

As is seen in all coins of this mint نصر is cut off; only ت of Nusrat is visible and the *alif* of ābād is in the loop of the س of Julūs and is followed by با. Again د of ābād is cut off.

Weight 168 grains.

Size 85.

(2) *Nuṣratābād rupee of Shāh 'Ālam II.*

This coin may be either of Shāh 'Ālam II or 'Ālamgir II. It is not possible to say which, as the name is cut and there is no Hijri date. But from the ornamentation of dots on both obverse and reverse and from the style of lettering, it seems to me to be of Shāh 'Ālam II. It is of the seventh Regnal year and is certainly of Nuṣratābād. The two nuqtas below نصر (Nusr) are those of the ت which is cut off. The mint name here is written exactly as in the Aurangzeb rupee described by Mr. H. Nevill in Numismatic Supplement XXX, page 260.

Obverse.	Reverse.
بادشاه غازی	مانوس
سکه مبارک	میمنت
	۷
	سنه جلوس
	ضرب
	نصر اباد
	ت

Weight 173.

Size 95.

(3) *A mohar of 'Ālamgir II. Mint Nuṣratābād (عرف) alias Dhārwar.*

The mint is probably Nusratābād with the addition (عرف) (alias) of some name of which two letters are clear viz., ر (re) and و (vāv) or perhaps د (Dāl). It is quite possibly Dhārwar.

Nusratābād was considered by Mr. Irvine to stand for Sakkar (or Sagar) and by Mr. Nelson Wright to represent Dhārwar (see I.M.C. and P.M.C. under mint name Nusratābād and N.S. XII, page 381). If this coin is really of that mint as seems probable, it supports Mr. Nelson Wright's contention: the س followed by ر cannot form part of Sakkar or Sagar.

There is another peculiarity about this coin. The Hijri year is given in an inverted fashion as —811 (1180=A.D. 1766-67) over *sana* (سنه) in place of the Regnal year. As 'Ālamgir's last year was 1173 A.H., the coin must have been issued under Shāh 'Ālam II. This is not surprising if the coin is of Dhārwar; for it was in the possession of the Marāṭhās from 1753 A.D. (see Gazetteer under Dhārwar). The workmanship is also of an inferior type.

The mint is certainly not ظفر نگر (Zafarnagar), as the alias does not fit, for Zafarnagar is identified by Professor Hodivālā with Tamarni (N.S. XXXIV, page 240). It cannot also be the Zafarābād which was supposed by Dr. Taylor to be Zafarābād (Bidar) in the Deccan (N.S. XII, page 334).

Obverse.

بادشاه غازي عالم گير
صاحب قران ثاني

Reverse.

نصر عرف درو
ضرب
جلوس ميمنت مانوس
۸۱۱
سنه

Weight 167.

Size. 95.

(4) *Aurangzeb Rupee. Mint Pūna.*

This rupee is of the Mint Pūna and of A.H. 1111, Regnal year 45, of Aurangzeb. It can be no other than our "Poona," for even on the later coins with the epithet Muhyābād, Pūna, is written in the same way. This variety is not explicitly referred to in Prof. Hodivālā's Article in N.S. XXXI 196, for there he deals only with the origin of the name Muhyābād given to the place. But this coin goes to confirm the passage quoted by Prof. Hodivālā, from Khāfi Khān, who says that it was in the 47th year of his reign that Aurangzeb gave the name Muhyābād to Poona. Naturally, therefore, this coin of the year 45 only bears the old name Pūna without the alias Muhyābād. It is perhaps unique, as I do not know of any other with the mint-name Pūna of any King before Shāh 'Ālam II.

(5) *Mohar of Aurangzeb, 1117 Hijri; 50 R. Y. Mint Mailāpūr.*

The weight, 170 grains, the size, a little under .9 and the inscription all point to its genuineness. No doubt the numerals

of the Hijri date are not well formed, it being very difficult to engrave such small figures on dies and then to stamp them on gold. There is a slight dent in the units figure of the date which shows that it is not a "one" but probably a "seven". We find in the Lucknow Museum a gold coin, No. 3441, of the same type of Mailāpūr, issued by Shāh 'Ālam Bahādur only 4 years after this coin. There is a similar coin of Shāh 'Ālam of 1121 Hijri in the British Museum, No. 860. It is, therefore, quite probable that the mint was started in Aurangzeb's time.

Obverse.

۱۱۱۷
اورنگ زیب عالم گیر
شاہ
چو بدر منیر
مکہ
جہان

Reverse.

مانوس
میمنت
۵۰
سنہ جلوس
ضرب
میلا پور

Mr. Nelson Wright was good enough to compare this mohar with the British Museum rupee of Shāh 'Ālam Bahādur of this mint and he writes to me that both the coins have the same style of lettering.

(6) *Arkāt rupee of Shāh 'Ālam II.*

Hijri 1193.

Regnal year 19.

The mint is certainly Arkāt, being inscribed exactly as on the well-known coins of Arkāt of the East India Co. See, for example, B.M.C. 103 but it is different in having the name of Shāh 'Ālam instead of 'Ālamgir as in the B.M.C. coin and in not having Shāh 'Ālam's couplet as in the Lucknow M.C. coins Nos. 4519 to 4531.

Weight 175.

Size 9.

Obverse.

شاہ عالم
بادشاہ غازی
۹۳

Reverse.

مانوس
میمنت
۱۹
سنہ جلوس
ضرب
ارکات

(7) *A Cambay rupee of Shāh 'Ālam II.*

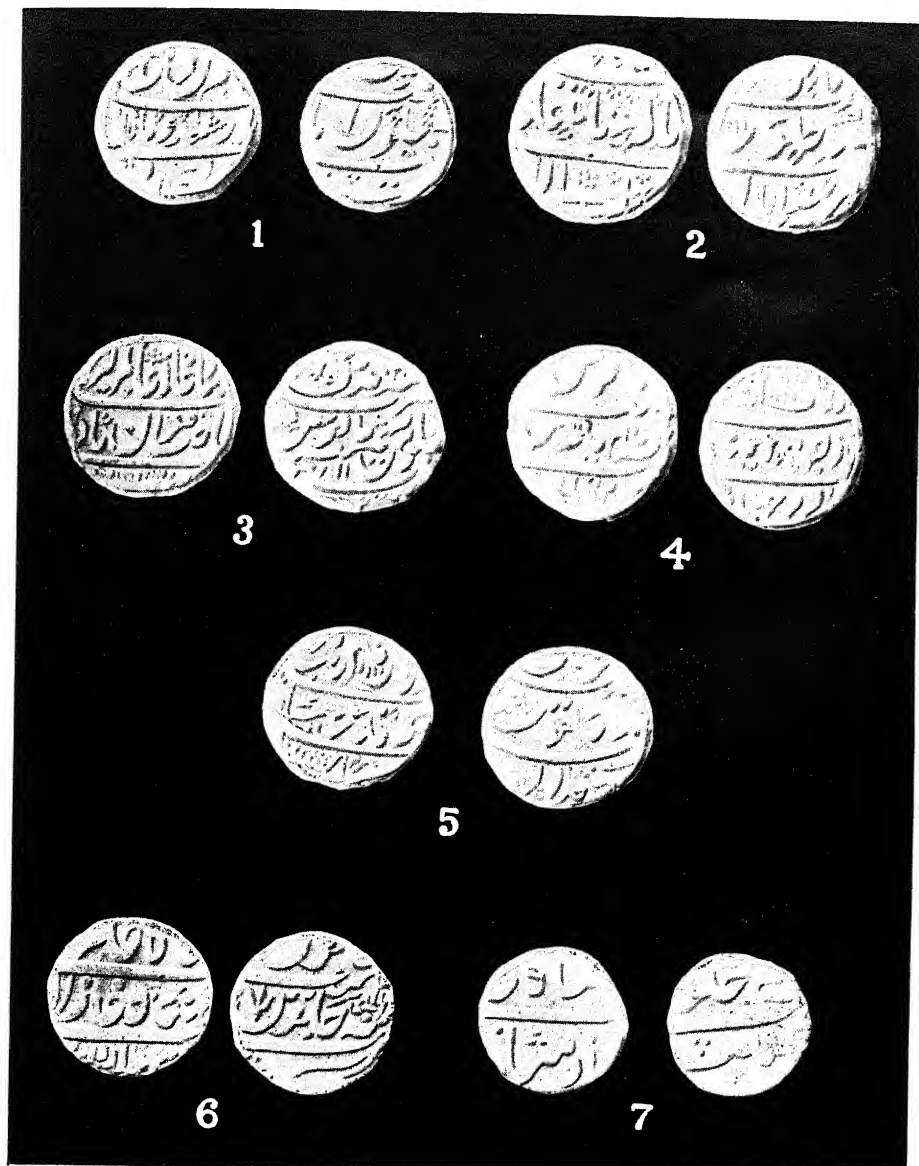
No coin of Cambay of Shāh 'Ālam II is recorded in any of the published catalogues of the different Museums (B.M.C.,

I.M.C., P.M.C., and Luc. M.C.). Mr. Whitehead in his mint note on Cambay in the Catalogue of the Coins in the Punjab Museum says that "Coins in all three metals are known of Shāh 'Ālam I, but Rupees only of all the succeeding Emperors except Shāh 'Ālam II". Dr. Taylor in his article on this mint in N.S. XX, No. 119 writes as follows:—

"Though Cambay became practically independent of the Imperial Power as early as A.D. 1730, its coins continued to bear the name of the regnant Mughal Emperor of Delhi, certainly till the time of 'Ālamgir II and possibly even later." Evidently Dr. Taylor had not seen a rupee of Shāh 'Ālam II when he wrote the article above referred to in 1912. He was, however, right in advancing the conjecture that possibly even after the reign of 'Ālamgir II, coins of this mint were struck in the name of the reigning Emperor.

There is another point in regard to which the coin deserves notice and this is the spelling of the mint name. The usual ن (nūn) after the first letter ك (kāf) is not to be seen, and its place is taken by م (mīm). The first Mughal coin bearing this mint name has the spelling with a ه (he) after ك (kāf) and also a ن (nūn)—Khanbāyat كهنبايت. In the early part of Aurangzeb's reign this spelling was altered to Kanbāyat کنبايت without the ه (he) and so it continued till 'Ālamgir II. This is the first specimen with م (mīm) کمبايت.

VICĀJĪ D. B. TĀRĀPOREVĀLĀ.



302. THE MONETARY SYSTEM OF INDIA AT THE TIME
OF THE MUHAMMADAN CONQUEST.

[NOTE.—*This Prize Essay is published only in compliance with the wishes of the Numismatic Society of India as expressed by Resolution 4 of its Annual Meeting, 1931.*—EDITOR.]

The conquest of India by the Muhammadans really began only with the invasions of Shihābu-d-din (Muhammad Ghori). Shortly before the time of Shihābu-d-din, the following dynasties were prominent in Northern and Central India and to one or other of these dynasties the numerous petty princes of India paid homage and feudal service. Mr. Thomas is of opinion that the right to issue a particular species of currency was conventionally confined to the Lord Paramount among the Rajput States for the time being. So it will suffice if we take into consideration the monetary systems of these dynasties alone.

1. Tomaras in Delhi.
2. Chauhāns in Ajmer (afterwards in Ajmer and Delhi).
3. Rāthors in Kanauj (after the Tomaras).
4. Bāghilās in Gujarāt.
5. Chandellas in Bundelkhand.
6. Rajputs in Narwar.

The gold coins of this period were exact copies of the gold coins of Gāngeyadeva of the Kalachuri dynasty of Dāhala.

The device of "the seated bull and horseman" introduced by the Brāhman kings of Kābul on their silver coins was copied by almost all the rulers of this period in their billon and copper coins. These "bull and horseman" coins are mentioned by Muhammadan historians as "Dilliwāls" and were adopted by the early Muhammadan conquerors, the Sultāns of Delhi. But their particular Hindu name is not known.

So in order to have a correct view of the monetary system of Northern India we must study minutely the systems of Gāngeyadeva and the Brāhmana kings of Ohind.

The design of the coinage of Gāngeyadeva which was copied by the above rulers was a very simple one. The king's name occupies the whole surface of the obverse and a rudely executed figure of a seated goddess appears on the reverse. The coins of Gāngeyadeva exist in three metals, Gold, Silver, and Copper and in four denominations, namely, the *dramma* (drachma), half-*dramma*, quarter-*dramma* and one-eighth-*dramma*.

Various kinds of drammās are mentioned in the Siyādoni inscription of the 10th century A.D. Drammās are also

mentioned in the inscriptions at (1) Jaunpūr—A.D. 1216 (*Archl. S. Reports*, XI, 176). (2) Bosani—A.D. 1207 (*Archl. S. Reports*, XXI, 102). (3) Gwālior—A.D. 875 (Bhojadeva of Qanauj). (4) Pehewa—903–907 A.D. (*Ep. Ind.*, Vol. I, 184). (5) Asni—A.D. 917 (*Ind. Ant.* XVI, 174). From these inscriptions we must take it for granted that the dramma was the monetary standard in Northern India from the 9th to the 13th century A.D. The name dramma was originally derived from the Attic drachma with which it harmonises in the standard of weight, the latter being about 67·2 grains.

For an illustration let us take up for consideration the Shadboddika dramma mentioned in the Jaunpūr inscription. The term Shadboddika means six (shad) boddikas. Now the word “Boddika” is accepted by the authorities as the corrupt Hindi pronunciation of the Sanskrit word *pādika*. The *pādika* (one-fourth) was equal to one-fourth of the ancient *Kārsha*. Cunningham (*C.A.S.*, XI, 176) is of opinion that “as the *Kārsha* contained 44·8 grains of pure silver, the *pādika* was exactly equal to the Greek Obolus of 11·2 grains”. Hence we see that the Shadboddika dramma was equal to $11·2 \times 6$ or 67·2 grains or the same as the Greek drachma and the boddika represented the Obolus.

The *Śrīmadādivarāha dramma* is mentioned in the Gwālior inscription of Bhojadeva, Gurjjara-Pratihāra king of Kanauj and Northern India who reigned from about 840 to 890 A.D. The weight of good specimens of these drammās ranging up to 63 grains agrees with that of the Greek drachma.

The *Vigrahapāla dramma* was also of the same weight as the *Shadboddika* drammās. Fractions of this coin are also mentioned as half and one-third of a *Vigrahapāla dramma*.

The *Panchāyika dramma* appears to have been a piece of 5 boddikas. As a boddika weighs 11·2 grains, a *Panchāyika* could weigh only 56 grains. This weight tallies with that of the silver coins of the Brāhman kings of Ohind.

Though several other kinds of coins are mentioned in the aforesaid inscriptions, it is now impossible to trace their exact values inasmuch as they are not referred to in any literary or mathematical work. So they have been left untouched for further research.

The *Dilliwāls* noticed before were composed of a mixture of silver and copper in intentionally graduated proportions, of one fixed weight. The weight of this series seems to have been intended to harmonise with that of the ancient *Purāna* or punch-marked coin of 32 Ratis, about 56 grains.¹

Now let us see whether these statements are corroborated or not by the existing coins.

¹ V. Smith's Catalogue, Indian Museum, I, p. 257.

The Rāthor dynasty of Kanauj which reigned till c. 1193 A.D. temporarily got the sovereignty of a large part of Northern India under its ruler Govindachandra whose epigraphic dates range from 1114 to 1154 A.D. Shihābu-d-din defeated Jayachandra, the last king of this dynasty and took Kanauj and Benāres. This victory destroyed one of the greatest Indian monarchies and extended the Musalmān dominion into Bihār.¹ So the coins of this dynasty would illustrate the monetary system of a large part of Northern India at the time of the Muḥammadan conquest. There are numerous coins of Govindachandra both in gold and copper. Gold drammas ranging in weight from 59 to 68 grains and copper drammas from 37 to 49 grains are in the cabinets of the Indian Museum. Cunningham describes only nine silver coins of Jayachand. Admitting that the legend 'Sri-Ajaya Deva' refers to Jayachandra, we see that silver or rather billon money was the chief currency of the time. Prithvirāj (c. 1175-93 A.D.), the last king of the Chauhān dynasty of Delhi and Ajmer issued silver and billon coins of the 'bull and horseman' type ranging in weight from 47 to 53 grains. These coins correspond with the *Panchāyika dramma* of 58 grai s. The 'bull and horseman' type of this dynasty was copied by the Muḥammadan conquerors, the Sultāns of Delhi.

Malayavarma (1220-32) and Chāhaḍadeva (1232-60) issued billon coins of the 'bull and horseman' type ranging in weight from 49 to 54 grains. Malayavarma struck a copper coin of 44 grains and Chāhaḍa a billon piece of 57·5 grains. These too must be *Panchāyika* drammas.

The coinage of the Chandella dynasty of Bundelkhand is also, like that of Govindachandra, a copy of the coinage of Gāngeyadeva. The gold coins are exactly the same as Gāngeya's except for the names. The copper coins substitute Hanumān for Lakshmi. Both copper and gold pieces follow the same scale of weights and are drammas or subdivisions of drammas. Smith has catalogued only the gold coins.

Kirtivarma (1055-1100) *AV*—30·8 grains ($\frac{1}{2}$ dramma).

Madanavarma (1130-1165) *AV*—62·3, 15·6 grains ($\frac{1}{4}$ dramma).

Paramārdi (1165-1203) has a dramma of 61·4 grains.

Trailokyavarma (1203-1240) *AV*—62·2 grains.

The following coins have been recorded by Cunningham in his *Coins of Mediæval India*, p. 79:—

Kirtivarma—31 grains ($\frac{1}{2}$ dramma).

Hallakhana (1097-1110)—15 grains.

Madanavarma—*AV*—61, 15; *Æ*—15 grains.

The type of the coins of the Eastern Chedi dynasty was also copied from that of Gāngeyadeva with the difference

¹ Elphinstone—History of India, p. 356.

that on the reverse a rampant lion was substituted in place of the seated goddess. The larger pieces are drammas and the smaller pieces are subdivisions of drammas.

Prithvideva (1140-60) *A*—59, 60 grains.

Jajalladeva (1160-75) *A*—58, 59, 14, 13; *Æ*—57.5, 14 grains.

Ratnadeva (1175-90) *A*—60, 13; *Æ*—14 grains.

From the above accounts of the coinage of the several dynasties, we at once see that the coins follow two concurrent denominations, viz: (1) the dramma of 67 grains and (2) the dramma of 56 grains. The first of these originated with the Greeks. The usual type which appears to have been imitated by all the princes of Hindustān and Central India from that introduced by Gāṅgeyadeva (1015-1040) of the Kalāchuri dynasty of Dāhala, "bears the familiar goddess (Lakshmi) on the obverse with a slight deviation from the Gupta device in that the goddess has four instead of two arms, and on the reverse is an inscription giving the king's name in old Nāgari".¹ All the gold coins of the Chandellas, the Tomaras and the Rāthors follow the weight standard of their Sassanian originals which represented the Attic drachma and are all drammas or subdivisions of drammas. The second denomination is nothing but the archaic *Purāna* of 32 ratis which perseveringly continued to make itself felt in the monetary systems of India from the post-Vedic rulers down to the early Muḥammadan conquerors. In this connection E. Thomas says, "proceeding onwards and avoiding any possible complications due to Greek intervention, this same weight re-appears in the money of Syāla and Sāmantadeva, the Brahmanical sovereigns of the Punjāb and Northern India in the 9th century A.D. It then runs through the entire issues of their Rajput successors, from whom it passed to Quṭbuddin and the Muḥammadan conquerors in A.D. 1191, when it had become so much of a national institution that the representative coins were known by the appropriate name of Dehlī-wāls."² But though the weight remained unaltered, the value of the coin depended upon the proportion of the baser metal in the composition of the coins. During the Rajput administration of Northern India, the device of the "bull and horseman" is almost invariably found on their copper and billon coins. This device was first introduced by the Brahman kings of Gandhārā (c. 860-950), the commonest of them being those of Spālapatideva and Sāmantadeva. It was also adopted by the Tomara and Chauhān dynasties of Delhi, the Rāthors of Qanauj and the Rajput kings of Narwar but the old standard of weight was retained all along.

¹ C. J. Brown—Coins of India, p. 52.

² Numismata Orientalia, 1874, p. 68.

There was another class of coins current during this time. These are called Gadhaiya coins. As regards the origin of the name, Dr. G. P. Taylor in his note (*J.A.S.B.*, 1904, p. 372) says that the name was derived from the Sanskrit *Gardabhiya*, meaning "Asinine", "of the Ass-dynasty". He suggests that from his devotion to the chase of the wild ass, the Sassanian king Varahrān V (A.D. 419-438) gained the nick-name of Varahrān Gūr or Bahrām the Ass-Hunter. "Now when the coins of this king began to circulate amongst his enemies, the Hunas, they, by a very evident *jeu d'esprit*, may have dubbed the thin insignificant looking silver pieces 'Ass-money,' a name that would readily 'stick'. Later on when imitations of coins of the same Sassanian type were struck by the Hunas themselves in India, the name would fall to be translated by some Prākṛit form of the Sanskrit equivalent *Gardabhiya*: and this designation, by a process of phonetic degeneration proceeding *pari passu* with the more and more degraded workmanship with the coins themselves, finally dwindled down to Gadhaiya, the term in use to-day by the common people." Thus these coins were copies of imitations of Sassanian coins issued in Mārwar and Rajputana by the White Huna King Toramāṇa. The first Huna imitations were thin silver pieces rudely executed from the Sassanian type. Later on, the coins became thick and dumpy and so degraded in type that it is not easy to trace their descent. A careful scrutiny, however, can discern on the obverse a rude imitation of Sassanian busts without wings to headdress and meaningless lines and curves and on the reverse lines and dots suggesting the Sassanian fire-altar. Copper specimens have also been figured by numismatists. Both the silver and copper varieties of this coin are still known by the name of Gadhaiya Paisa in Gujarāt. Cunningham¹ identifies them with the Shāḍboddhika drammas of the Jaunpūr inscription. In the Indian Museum collection, the silver coins range in weight from 59.7 to 74.5 grains and the copper coins from 52.2 to 65 grains.

Being secluded by impenetrable rocks, the country of Kāshmir has got to show for a long period a great uniformity of type and constancy in the matter of its currency. The 'Rājatarangini' or the Chronicle of Kāshmir by Kalhana and the *Ain-i-Akbari* of Abul Fazl are the most important sources from which information regarding the monetary system of the country can be gathered. It is true that there are some other records but they cannot be always relied on.

Though solitary specimens of gold and silver coins of the early kings prove that both these metals were used for the coinage, gold and silver disappear from the middle of the 9th century A.D., most of the known coins being of copper. A

¹ Coins of Mediæval India, p. 50.

study of the coins from the early times will easily convince any one of the fact that the Kashmirian coin-type—Obv. King standing: Rev. Goddess seated—which originated from the standard Kushan type remained unchanged until the Muḥammadan conquest of the country in the 13th century A.D. But in course of time, the type became so degraded that it is now very difficult to see any difference between the obverse and the reverse. This fact is also corroborated by the literature wherein is found very scant notice of these metals as currency and it may be concluded that neither gold nor silver formed, in Hindu times, an important part of the metallic currency. The copper coins of the period in question range in weight from 71·5 to 97·5 grains. Let us quote here the valuable data furnished by Abul Fazl.¹

“*Rop-Sasnu* is a silver coin of nine Māshās. The *Panchhu* is of copper, equal to the fourth of a dām and is called *Kasira*. One-fourth of this is the *Bārākāni*, of which again one-fourth is called *Shakri*.

4	<i>Kasiras</i>	=	1 <i>Hat</i> .
40	„	=	1 <i>Sasnu</i> .
1½	<i>Sasnu</i>	=	1 <i>Sikka</i> .
100	„	=	1 <i>Lakh</i> .”

A comparison of the above account and of the still surviving traditions with the materials supplied by Kalhana and other later writers shows that the currency of Kāshmir at this time was based on a decimal system of values. The following table with values actually used in reckoning has been worked out by Dr. Stein.²

12 Dinnāras	=	1 Dvādaśa (twelver), Bahagāni.
2 Dvādaśa	=	25 Dinnāras or 1 Panchavimsatika (twenty-fiver), Puntshu.
4 Panchavimsatika	=	100 Dinnāras or 1 Śata (Hundreder), Hath.
10 Śata	=	1,000 Dinnāras or 1 Sahasra (Thousander), Sasun.
100 Sahasra	=	100,000 Dinnāras or 1 Lakśa (Lakh).
100 Lakśa	=	10,000,000 Dinnāras or 1 Koṭi (Crore).

In using the designations here indicated, it was usual but not necessary to add the word Dinnāra in the general sense of money in order to mark their character as monetary terms.

¹ *Āin-i-Akbari*, Blochmann's Edition, Vol. II, p. 566.

² Stein's *Rājataranginī*, Vol. II, p. 322.

The following table shows the coins which can be assumed to have represented the monetary values of the above description :—

Value in Dinnāras.	Designation.	Coins.	Equivalent Value on Abul Fazl's Estimate.
12	Dvādaśa (Bahagāni)	45 grains	1/8th dām or 1/320 Rupee
25	Panchavimsatika (Puntshu)	91 grains	¼ dām.
100	Śata (Hath)	....	1 dām.
500	....	235 grains	5 dāms.
1,000	Sahasra (Sasun)	....	10 dāms.
12,500	....	73 grains	125 dāms.
100,000	Lakṣa (Lakh)	....	25 Rupees.
10,000,000	Koṭi (Crore)	....	2,500 Rupees.

But for the present, we are concerned only with the Puntshus of copper, the Dvādaśa pieces being not found among the actual coins.

The 'Rājatarangini' and other later chronicles incontestably show that the above monetary terms and the system of reckoning which can be traced from Akbar's time to the present day were in use even in Kalhana's time and probably centuries earlier.

The term *Dinnāra* derived from the *Denarius* of the West is explained by Sanskrit Lexicographers as the designation of a gold coin. But the mention of this term in connection with trifling expenses and in amounts which, if calculated on such a basis, would appear to be extravagant and impossible, indicates that it was of very low value. It cannot be positively said whether the *Dinnāra* meant a separate monetary token or whether it was simply used as a subdivision of a larger figure convenient for reckoning. "If the *Dinnāra* was more than a mere abstract unit of account, it could not well have been represented by any other token than the *cowrie*. For the weight of copper which would correspond to the 25th part of a *Panchavimsatika*, viz., 91/25 or 3.64 grains is manifestly too small for a real coin."¹ No copper coin of this small weight is found in Kāshmir. The literature also shows that the *cowrie* was from very early times used as a monetary token.

Muhammadian historians have preserved a record of the fact that on the first conquest of Bengal by the Moslems, they found no metallic or other circulating media of exchange except that supplied by *cowries*. No coined money of any

¹ Dr. Stein's *Rājatarangini*, Vol. II, p. 323.

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100 Sahasra	=	100,000 Dinnāras or 1 Lakśa (Lakh).
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But for the present, we are concerned only with the Puntshus of copper, the Dvādaśa pieces being not found among the actual coins.

The 'Rājatarangini' and other later chronicles incontestably show that the above monetary terms and the system of reckoning which can be traced from Akbar's time to the present day were in use even in Kalhana's time and probably centuries earlier.

The term *Dinnāra* derived from the *Denarius* of the West is explained by Sanskrit Lexicographers as the designation of a gold coin. But the mention of this term in connection with trifling expenses and in amounts which, if calculated on such a basis, would appear to be extravagant and impossible, indicates that it was of very low value. It cannot be positively said whether the *Dinnāra* meant a separate monetary token or whether it was simply used as a subdivision of a larger figure convenient for reckoning. "If the *Dinnāra* was more than a mere abstract unit of account, it could not well have been represented by any other token than the *cowrie*. For the weight of copper which would correspond to the 25th part of a *Panchavimsatika*, viz., 91/25 or 3·64 grains is manifestly too small for a real coin."¹ No copper coin of this small weight is found in Kāshmir. The literature also shows that the *cowrie* was from very early times used as a monetary token.

Muhammadan historians have preserved a record of the fact that on the first conquest of Bengal by the Moslems, they found no metallic or other circulating media of exchange except that supplied by *cowries*. No coined money of any

¹ Dr. Stein's *Rājatarangini*, Vol. II, p. 323.

description is mentioned even in the 14th century by Ibn Batūta.

The coinage of Northern India, at and prior to the invasion of Muhammad bin Sām, consisted of billon money. It may be seen how distinctly the *tanka* was the accepted and recognised term in India by the fact that the great Mahmūd of Ghazni while continuing to make use of the ordinary mint designation of Dirham, in the Cufic legend of his new Lāhore coinage of Mahmūdpur, admits the corresponding word टङ्क (or टङ्क) in the Sanskrit legend on the reverse.¹ Wilson remarks that the word also meant 'a weight of silver equal to four māshas' (=8 ratis or 14 grains). In Telegu *tankam* is a coin formerly current but now used only in account, equal to four silver fanams.

About the *tanka* Cunningham says, "At first it was perhaps a simple weight; and after a stamp was added, it became the name of a coin. But it was applied to the silver *Kārsha* and also to the copper *Paṇa* which was also known as a "copper *tanka*".² It soon became a general term for money, and it is so used in the 'Rājatarangini' as *tangkaka* It was in common use during the whole period of Muhammadan rule. Considering the continuous use of the name in India and the simple Indian derivation of the word, Cunningham rightly believed that the name was of Indian origin. The word 'pādika' or 'boddika' meaning one quarter of the silver 'Kārshāpana' or 'Purāṇa' or 32 ratis or 57·6 grains must weigh $57\cdot6 \div 4$ or 14·4 grains. Therefore the quarter Kārshāpana is the well-known silver tankā. This Indian tankā corresponds exactly both in name and weight with the Persian *Δανάκη* which was one-sixth of the 'siglos' of 86·4 grains, i.e., 14·4 grains.

SOUTHERN INDIA.

One has to face numerous difficulties in the effort to deal with the monetary system of Southern India. The materials for reconstructing the political history of the country are few. More limited still are the data available to the numismatist. Though there are traditions, they rarely mention the ruler's true name or title. Dates are still more seldom found. Classification depends entirely on the fabric and type of the coins. Symbols and findspots often help scholars to assign the coins to the dynasties to which they belong, but the results so obtained have sometimes led to serious errors. There is still another peculiarity which has led numismatists to wrong

¹ Thomas—Chronicles of the Pathān Kings of Delhi. See the illustration 7.

² Cunningham—Coins of Ancient India, p. 23.

conclusions and that is the fact of conquerors incorporating on their own issues the emblems of vanquished peoples and imitating well-established types.

The 'Kanakku Saram', an ancient mathematical treatise, gives the following table of weights for gems, gold, etc. :—

A nen-mani (grain of rice in the husk)	= 1	visa tūkkam.
4 nel (grains of rice in the husk)	= 1	kunri.
2 kunri	= 1	mañjāḍi.
2 mañjāḍis	= 1	panatūkkam.
10 panatūkkam	= 1	kalañju. ¹

Later on, the value of the Mañjāḍi was reduced by one half and its place was usurped by its representative the copper paṇa. The *kunri* was probably introduced from the 'Lilāvati', the standard Sanskrit work on Mathematics.

The metric system of Southern India appears to be based on the weights of the two seeds 'Mañjāḍi', weighing on the average about 5 grains and the 'Kalañju' which was ten times the Mañjāḍi weighing up to 50 grains.

Gold and copper were the metals used almost exclusively for the coinage; of the former there were two denominations the Huna, Varāha or Pagoda (50 to 60 grains) and the fanam (5 to 6 grains) based respectively on the weights of the 'Kalañju' and the 'Mañjāḍi'. So the Huna was ten times the weight of the fanam. Copper coins were called 'āsu' of which the English corruption is 'Cash'. The rare silver coins appear to follow the gold standard.

The ancient gold coins in the shape of spherules with very minute punch-marks were designated by the name of *pon* which signifies gold in Tamil. This *pon* became *hon* or *honnu* in Canarese and *hun* in Hindustāni. They weigh about 52 grains and appear to have been derived from the Kalañju. They were current for a great length of time. They constituted a considerable portion of the plunder carried away by the armies of 'Alāuddin. Some were reminted there. Ziauddin Barni says that they were distributed with such a lavish hand that specimens were still to be seen at Delhi. Again, Tavernier who visited India in the 17th century has figured this and other early types of southern coins.²

The derivation of the term 'Pagoda' is very obscure. It seems to be a Portuguese appellation derived from the Pyramidal temple depicted on one side of it. In Tamil the Pagoda is generally known as Varāha, probably from the fact that these coins had the figure of a Boar (Varāha) on the obverse. The *Honnu* in Canarese meant a half Pagoda. Sir W. Elliot is

¹ Sir W. Elliot's Coins of Southern India, p. 47.

² See Plate, figure 1, edition of 1680, London, published by Edward Everard.

of opinion that the normal standard coin was a piece equal to the modern half Pagoda, the Pagoda itself being the double *pon*, which ultimately became the *Varāha*. A Pagoda weighed approximately 52 grains and seems to be based on the weight of the Kalañju seeds. Regarding the development of the Pagoda, Mr. Smith¹ says, "the Pagoda (Hun or *Varāha*) was developed independently like the early Lydian coins, from a globule or spherule of gold. The earliest examples, of uncertain date, are either quite plain or have a punch-mark in the centre. Gradually, as in Greece, the globule was flattened and became an ordinary die-struck coin."

The curious cup-shaped thick pieces with a lotus in the centre which received the name of 'Padma-ṭanka' are heavier than the Pagoda, all the coins catalogued by Smith averaging in weight about 58 grains. Both Elliot and Smith connect their peculiar form with the coinage of the western Chālukya dynasty of Kalyāni. But they cannot determine their date with accuracy. Though both the series agree in shape, they do not correspond in the matter of weight. The gold coins of Jagadekamalla described by Smith in the Indian Museum Catalogue (p. 313) weigh 67·3 and 68 grains and have the figure of a temple depicted on the obverse. These coins correspond in weight with the gold Kārsha of 57 or 58 grains. Similar coins of the Kadamba dynasty of Goa whose other coins follow the Greek standard have been called 'Nishkas', the reason for which I am unable to explain, the *nishka* according to Manu being equal to four Suvarṇas or 576 grains. The Chālukyan coins are not struck to the southern scale of weights. The gold coins seem to be intended for drachmas of about 67 grains. However, it is quite evident that the influence of the dramma extended even to Southern India. The silver coin of 37·8 grains of Vishnu Chitta Deva of Goa indicates that half drammās were also current and that silver coins followed the gold standard exactly.

Vishnuvardhan of the Hoysāla dynasty of Dvārasamudra struck gold coins ranging in weight from 61·75 to 63 grains. One gold piece of 65 grains of Rāja Rāja (Cholā) has been mentioned by Elliot in his 'Coins of Southern India'. It is thus seen that the above two dynasties adopted the Greek standard and issued drammās and subdivisions of drammās.

But though all the above ruling dynasties adopted the Greek standard, they could not reject the old decimal system inasmuch as we invariably find that the gold fanams are exactly one-tenth of the weight of the larger pieces, thus retaining the proportion between the Mañjādi or paṇa and its multiple the Kalañju.

¹ V. A. Smith.—Catalogue of Coins in the Indian Museum, I, p. 310.

Now if the value of the Kunri or Rati introduced in the southern Tables of weights from the 'Lilāvati', a Sanskrit work on Mathematics of the 12th century, be substituted in the table given on page 13, the values of the Mañjādi and the Kalañju are found to be nearly seven and 70 grains. Though we have previously said that some dynasties adopted the Greek standard, it was only by introducing the Rati of Northern India that they accidentally arrived at these weights which exactly corresponded with those of the Greeks. The gold fanams of the Chālukya, Cholā and Kākatiya dynasties are from six to seven grains in weight, *i.e.*, they still retain their metric proportion to the heavier pieces corresponding in weight to the Kalañju or 70 grains, the Greek standard being about 67 grains.

The old Arithmetical table¹ furnished by Sir W. Elliot to E. Thomas is as follows:—

2 Gunjas	= 1 Dugala (= $\frac{1}{2}$ fanam).
2 Dugalas	= 1 Chavala (= panam or fanam).
2 Chavalas	= 1 Dhāran.
2 Dhāranas	= 1 Hoṇa (= pratapa, māḍa or $\frac{1}{2}$ pagoda).
2 Hoṇas	= 1 Varāha (the Hun or Pagoda).

The Gunja or unit (= $\frac{1}{2}$ fanam) is the rati.

According to this table, the fanams weigh seven grains and the Varāha 56 grains. The Varāhas of the Chālukya dynasty ranging in weight from 55 to 58 grains, the gold Pagoda of 54½ grains of Vijjala of the Kalachuri dynasty, the gold Varāha of 52·2 grains of Devagiri all agree in weight with that of the Varāha of the above table. The gold fanams mentioned before also follow the above table.

As regards silver coins, it is well worth recording the remarks of Ferishta in connection with the plunder of Southern India by Malik Kāfūr. "It is remarkable that silver is not mentioned as having been taken during this expedition to the Carnatic and there is reason to conclude that silver was not used as a coin in that country at all in those days. No person wore bracelets, chains or rings of any other metal than gold; while all the plates in the houses of the great and in the temples were of beaten gold."² Of course we cannot accept this remark as a positive fact, because stray specimens of silver coins have been collected and described by Elliot³ who says that the currency continued to be *mainly* of gold until the Muḥammadans came to be permanently established in the South. Their preference for the rupee led to the introduction of a silver currency, without, however, displacing the gold

¹ Thomas—Pathan Kings of Delhi, p. 224.

² Briggs' Ferishta, Vol. I, p. 375.

³ Sir W. Elliot—Coins of Southern India, p. 57.

previously in circulation. Elliot has described silver coins of the Rāja Rāja Cholā type struck in the 11th century and some specimens also from Sultānpur.

'Kāsu', a copper coin, is a purely Dravidian word meaning a coin. Eighty of these constituted a fanam or paṇa just as eighty cowries made a *paṇ* in Northern India. So a 'Kāsu' may be called a copper *cowrie*. The 'Kāsu' has been identified by Mr. Ellis with the Sanskrit 'Kārsha'. He derives both the 'Kāsu' and the 'Kārsha' from the same source on the ground that the law books call a Kārsha or eighty ratīs of copper a paṇa of Kārshapana.

Copper coins of various types are to be met with even now in the bazars but they cannot be classified in any systematic way.

"The conclusion to be drawn from the foregoing details", says Sir Walter Elliot, "is that the monetary system of Southern India is of indigenous origin, based on rude seminal and testaceous exponents of value which have been exchanged for definite metallic counters, regulated by artificial skill, their original names and the numerous changes and variations in which exhibit a certain affinity indicative of their common origin".¹

PARESH NĀTH BHATTĀCHĀRYA.

¹ *Ibid.*, p. 60.

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By C. R. SINGHAL.

(*Numismatic Supplement*, No. XLI for 1928, Article No. 282.)

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- 869 Dikshit, K. N. JBBRAS, XXIV, p 382

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- 870 Martin, F. C. NS, XL, (274), 1926-27

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- 871 ————— NS, XLII, (296), 1929

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(4) GUPTA.

- 874 Dikshit, K. N. ASR, 1923-24, p 124

An early dated silver coin of Kumāragupta.

- 875 Vats, Madho Sarup. ASR, 1926-27, p 233

A gold coin of Samudragupta of the "Battle-axe type".

(5) NARWAR.

- 876 Dayāl, Prayāg. NS, XL, (268), 1926-27

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- 877 Krishnamāchārī, C. R. ASR, 1924-25, p 158

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- 878 **Kundangar, K. G.** NS, XLII, (285), 1929
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- 884 **Streenivās, T.** RADN, 1925-26, p 21
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N. Wt. 220. 6; Size .7.

Coin of Vasu (? Vasudeva Kushan), a King in North-Western India (? and Sistān), about (?) 200 A.D.

Type: Kushan King at altar and throned goddess; Name Vasu in Brahmi characters vertically under left arm of King.

The degraded Greek legend (PA) ONANO in left margin of obv. before the king is a new feature in this specimen. (Pl. 4. 1.)

P. S. TARĀPORE.

305. A RARE BAHMANI RUPEE.

Ghiyāsuddin. Abul Muẓaffar Ghiyāsud-dunyā waddin Tehamtan Shāh Sulṭān.

AR. Wt. 147; Size 1.05.

Mint Aḥsanābād; Date, 799 A.H.

Obverse.

Reverse in square area.

المستوثاق بالله
[١] لحنان ابو المظفر
غياث الدنيا والدين

تہمتن شاہ
السلطانین
السلطان

Right Margin, احسانباد
Lower Margin, ٧٩٩

No description of any coin of this King has been published. Ghiyāsuddin is one of the four Bahamani Kings whose coins have not been discovered. I may here bring to the notice of readers that the reverse in square area reads تہمتن شاہ السلطانین السلطان. Tehamtan Shāh seems to me to be quite clear. There is no doubt regarding its legibility. It cannot be 'Bahaman Shāh' as the Nuqtas on the 1st and 2nd ت are distinct. Tehamtan in Persian means Hercules. Rustam was also known as Tehamtan, i.e., the Persian Hercules. It will not be surprising if in future the genealogy of the Bahamani Kings is traced back to Sāsānian Kings. The originator of the House of Bahamani, Ḥasan, is said to have been a descendant of Bahman Shāh.

Tehamtan and Bahman Shāh are both Persian names and this also supports the view of Colonel Haig rejecting the old theory of Ferishta concerning the assumption of the sobriquet of Gangu Bahamani by Ḥasan. (*Vide* N.S., No. XXXIX, article 261.) (Pl. 4. 2.)

P. S. TARĀPORE.


306. SOME RARE MUGHAL COINS.

(1) *Jalāluddīn Akbar.*

AR. Wt. 172; Size 1.1.

Mint Gwāliar; dated 966 A.H.

Obverse

Within square
Kalima and Mint Mark 
(Swastika) and in the margin
names of four Khalifs.

Reverse

اکبر بادشاہ غازی
م محمد
جلال الدین
Margin left ابو المظفر
Upper السلطان
Right العادل
Lower ضرب گوالیر

Silver coins of Sūri Kings from this Mint are known. Copper coins of Akbar also have been published but no silver coins have hitherto been discovered. It is interesting to learn that Akbar conquered the fortress of Gwāliar in 966 A.H. and this coin is of the same year. (Pl. 4. 3.)

(2) *Shāh Jehān 1.*

AE. Wt. 318; Size .9.

Mint Lakhnau; Date 1041 A.H. (Pl. 4. 4.)

Obverse on Floral background. Reverse on Floral background.

غازی
بادشاہ
جہان
شاہ ۸

۱۰۴۱
سنہ
لکھنؤ
ضرب

There is one copper coin of Shāh Jehān of Lakhnau Mint in the Indian Museum without date and of a different variety.

(3) *Aurangzeb 'Ālamgir.* (Pl. 4. 5.)

AV. Wt. 173; Size .8.

Mint Chināpatan; Date 1114 A.H. 47 R.

Obverse.

عالم گیر
۱۱۱۴
اورنگ زیب
شاہ
زد چو مهر منیر
سکہ

Reverse.

مانوس
میمنت
سنہ ۱۱۱۴ جلوس
ضرب
چینا پتن

در جهان

This is an unpublished Mohar of Aurangzeb of this Mint.

(4) AR. Wt. 177 ; Size .85. (Pl. 4. 6.)

Mint Poonamali ? (Tamil. Poovirumdamali or Pundamali); Date 1112 A.H. 44 R.

Obverse.

عالم گیر

۱۱۱۲

رنگ زیب

سـ

چو بدر منیر

سـ (sic) کھ

Reverse.

مانوس

میمنت

سنه ۴۴ جلوس

ضرب

پونملے

If the reading of the Mint is correct, this coin adds one more to the list of Mughal Mints.

Poonamali or Pūnamali is a place about thirteen miles from Madras and has an old Fort now in ruins. The style of the coin also resembles South Indian Coins of Aurangzeb.

(5) *Jehāndār Shāh.*

AE. Wt. 105 ; Size .75.

Mint Farkhunda Bunyād (Haidarābād); Date (11) 24, 'Ahd. R. (Pl. 4. 7.)

Obverse.

جهاندار

سـ

۲۴

فلوس (۱۱)

Reverse.

بنیاد احد

سـ

فرخنده

(6) *Farrukhsiyar.*

AR. Wt. 175. Size .9.

Mint. Bidrūr ? Date 1130 A.H. 7 R. (Pl. 4. 8.)

Obverse.

فرخ شیر

۱۱۳۰

سـ

فضل حق باد

Reverse.

مانوس

میمنت

سنه ۷ جلوس

ضرب

بیدرور

This is a new Mint and similar to that of No. 8.

(7) AE. Wt. 106; Size .7.

Mint Farkhunda Bunyād (Haidarābād; Date 1125. (Pl. 5. 9.)

<i>Obverse.</i>	<i>Reverse.</i>
فوخ سیر	بنیاد (حد)
س	س
۲۵	ضر فرخنده
فلوس ۱۱	

(8) *Muhammad Shāh.*

AR. Wt. 175; Size .9.

Mint Bidrūr? Date 4 R. (Pl. 5. 10.)

<i>Obverse.</i>	<i>Reverse.</i>
محمد شاه	مانوس
شاه غاز	میمنت
ک	سنه ۴ جلوس
مبار	ضرب
	بید رو (ر)

This is a new Mint, same as that of No. 6.

(9) *Almad Shāh.*

AR. Wt. 40; Size .55.

Mint Katak; Date missing.

<i>Obverse.</i>	<i>Reverse.</i>
شا بها (در)	میمنت
ع	جلوس
شاه	

Quarter Rupee of Katak Mint. The Mint-name is cut but the coin bears the Katak mint-mark. ۳ (Pl. 5. 11.)

(10) *Ālamgir II.*

AR. Wt. 172; Size .85.

Mint Mukhtal; Date 1169 A.H. (Pl. 5. 12.)

<i>Obverse.</i>	<i>Reverse.</i>
عالم گیر ثانی	مانوس
بزر زد سکه صاحب	میمنت
قوانی	جلوس ضر
	مکھتل ۱۱۶۹

This is a new Mughal Mint. Mukhtal is in Maḥbūbnagar District, H.E.H. the Nizām's Dominions.

(11) AR. Wt. 176; Size .9.

Mint Naṣratābād; Date 11XX A.H. 7 R.

Obverse.

۱۱ عالم گیر
بادشاه غاز
سکه مبار

Reverse.

مانوس
میمنت
سنه ۷ جلوس
ضرب
نصر ابا (د)
(ت)

This is an unpublished Mint of this king. (Pl. 5. 13.)

(12) SHĀH 'ĀLAM II.

AV. Wt. 165; Size .8.

Mint Muṣṭafābād; Date 1185 A.H. 12 R.

Obverse.

شاه عالم
بادشاه غاز
سکه مبار ۱۱۸۵

Reverse.

مصطفی آباد
ضرب
جلوس میمنت مانوس
سنه ۱۲

No gold coin of this Mint has been published. (Pl. 5. 14.)

(13) AR. Wt. 172; Size .85.

Mint Dalipnagar? Date 6 R. (Pl. 5. 15.)

Obverse.

فضل اله حامی
سکه زد بر
هفت

Reverse.

سنه ۶ جلوس
ضرب
دلپ نگر

If the reading of the Mint is correct, this is a new Mint.

(14) Æ. Wt. 239; Size .95.

Mint. Ravishnagar Sagar? (Pl. 5. 16.)

Obverse.

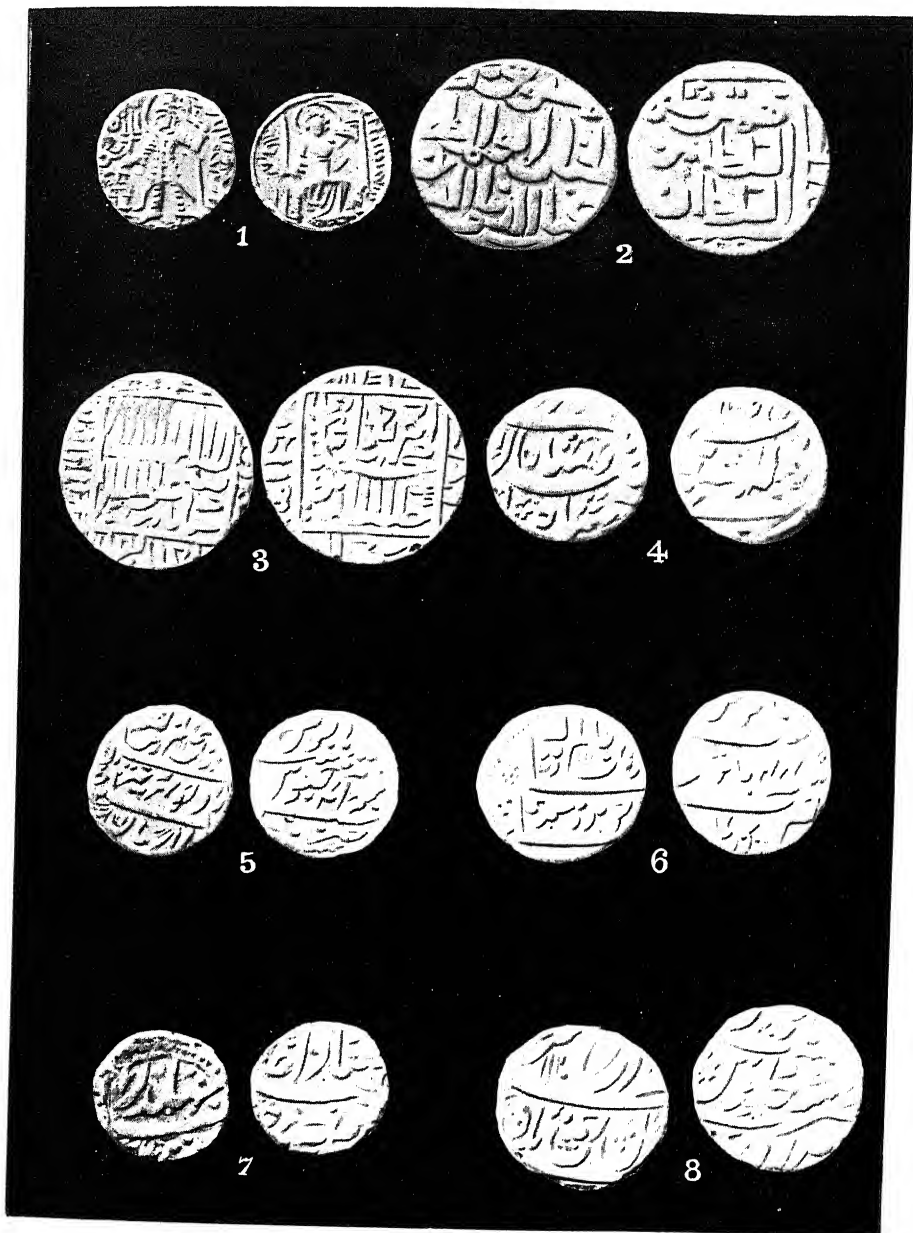
شاه عالم باد
حامی دین

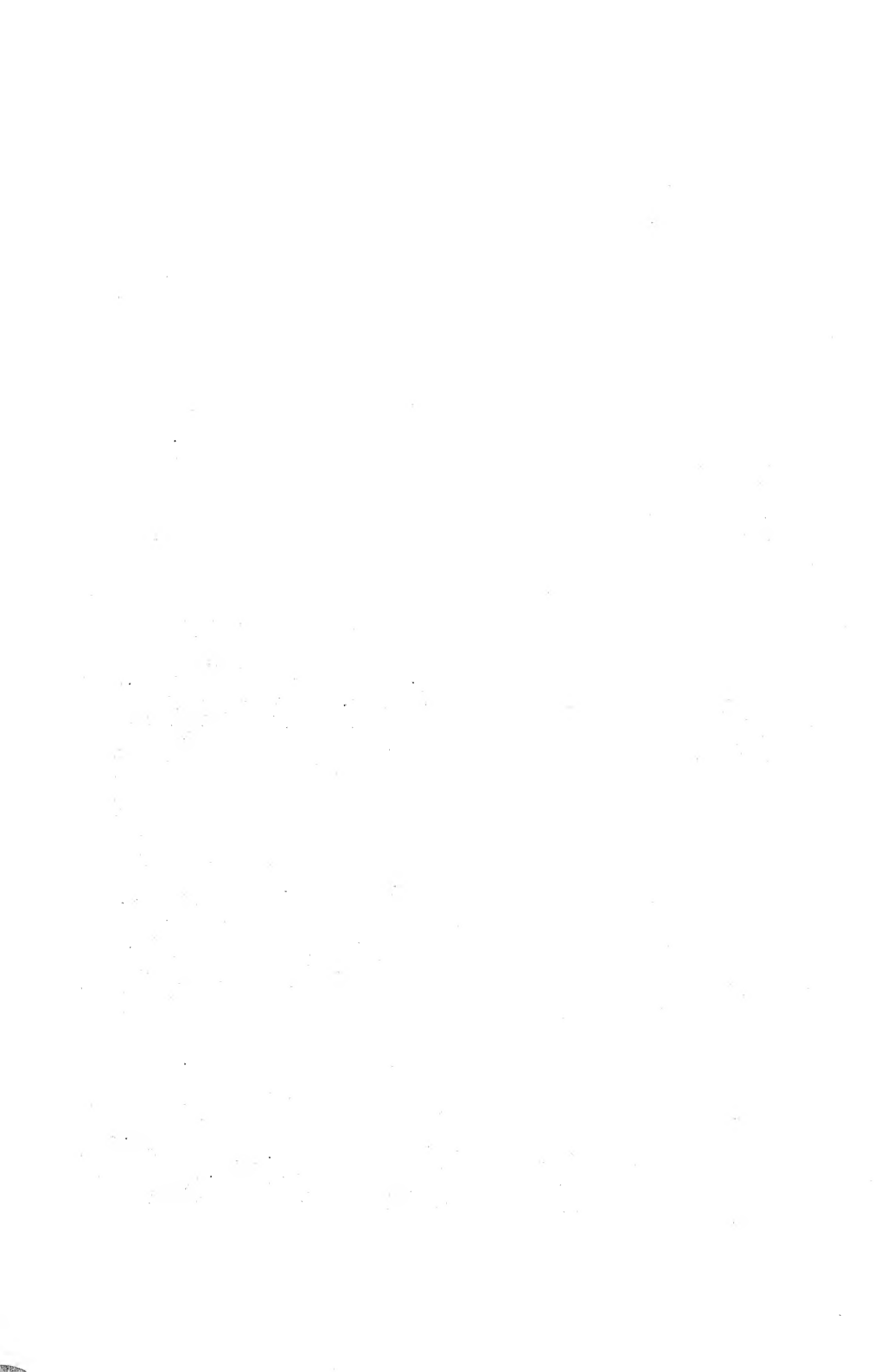
Reverse.

مانوس
میمنت
سنه ۵۵ جلوس

I am very much indebted to Prof. S. H. Hodivālā, Rāi Sāheb R. R. Chāndā of Indian Museum, Calcutta, and also to Messrs. G. Yazdāni, T. Streenivas and Khwāja Aḥmad of the Haidarābād Museum for their valuable assistance in describing and identifying some of the above coins.

P. S. TĀRĀPORE.







9



10



11



12



13



14

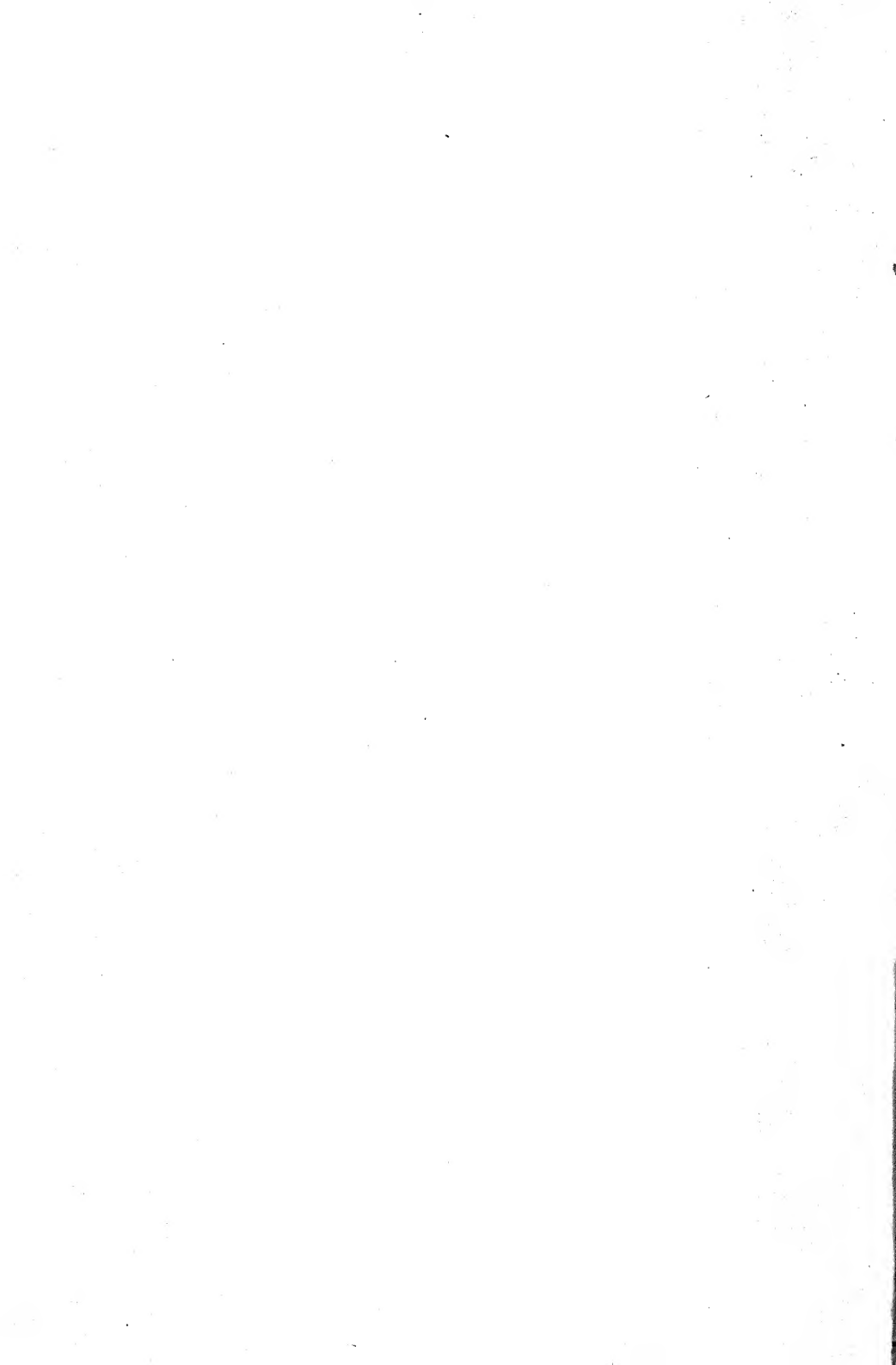


15



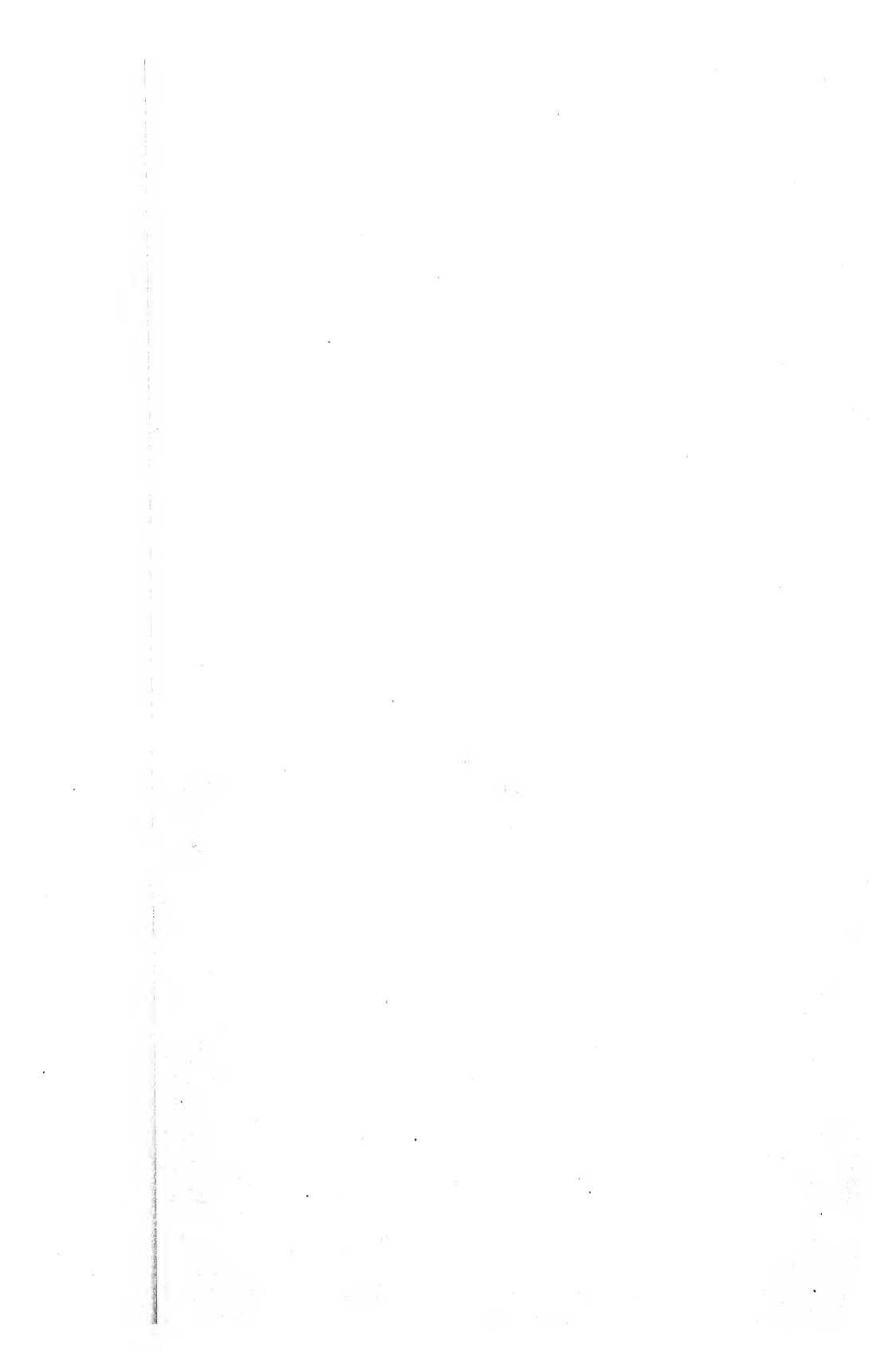
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Proceedings
of the
Asiatic Society of Bengal
for 1929.

[Journal and Proceedings of the Asiatic Society of Bengal.]



Proceedings, Asiatic Society of Bengal, 1929.

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PROCEEDINGS OF THE ANNUAL MEETING, 1930.

The Annual Meeting of the Asiatic Society of Bengal was held on Monday, the 3rd February, 1930, at 5-30 P.M.

PRESENT :

RAI UPENDRA NATH BRAHMACHARI BAHADUR, M.A., M.D.,
Ph.D., F.A.S.B., President, in the Chair.

Members :

Abdul Ali, Mr. A. F. M.	Iyer, Rao Bahadur L. K. A.
Asadullah, Mr. K. M.	Jacob, Mr. J.
Barwell, Lt.-Col. N.	Knowles, Lt.-Col. R.
Bhandarkar, Dr. D. R.	Law, Dr. S. C.
Biswas, Mr. K.	Mahindra, Mr. K. C.
Brahmachari, Dr. I. B.	Mallya, Dr. B. G.
Brown, Mr. Percy	Manen, Mr. Johan van
Chakravarti, Mr. Chintaharan	Miles, Mr. W. H.
Chatterji, Mr. M. M.	Mukherjee, Mr. D.
Chatterji, Mr. P. P.	Mukherjee, Mr. S. N.
Christie, Dr. W. A. K.	Neogi, Dr. P.
Cohen, Mr. D. J.	Pilgrim, Dr. Guy E.
Connor, Sir Frank	Rao, Rao Bahadur M. V.
Das, Dr. Kedarnath	Ray, Kumar Sarat Kumar
Das-Gupta, Mr. H. C.	Ray-Chaudhury, Dr. H. C.
Datta, Mr. H. N.	Sen, Mr. B. C.
De, Mr. K. C.	Sen, Mr. P. C.
Deb, Kshitindra, Rai Mahasai of Bansberia Raj.	Seth, Mr. Mesroby Jacob
Fermor, Dr. L. L.	Sewell, Lt.-Col. R. B. S.
Fleming, Mr. Andrew	Siddiqi, Dr. M. Z.
Ghose, Mr. T. P.	Sommerfeld, Mr. A.
Ghuznavi, Mr. A. H.	Stapleton, Mr. H. E.
Goil, Lt.-Col. D. P.	Suhrawardy, Mr. Justice Z. R. Z.
Gupta, Mr. S. N.	Urchs, Dr. Oswald
Insch, Mr. James	Watling, Mr. R. G.
	Young, Rev. A. W.

and many others.

Visitors :

Bose, Dr. K.	Dorjee, Mr. T.
Bose, Mr. P. B.	Dudley, Mr.
Brahmachari, Mr. P.	Dudley, Mrs.
Brahmachary, Rai Sahib S. C.	Gangooly, Mr. P.
Brock, Mr. R. W.	Gubbay, Mr. E. R.
Buchart, Mrs.	Gubbay, Mr. R. E.
Cleghorn, Miss O.	Guderian, Mr. A. H. Farrel
Das, Mr. S. K.	Gupto, Mr. A. K.
Das, Mrs.	Hassan, Mr. Syed
Das-Gupta, Mr. A.	Huidobro, Senor Marco G.
D'Auvergne, Capt. V.	Hudson, Mr. G. W.
Deb, Mr. H. B.	Hutchings, Mr. R. H.

Insch, Mrs.	Paul, Mr. K. S.
Knight, Rev. P.	Robertson, Mr. A. K.
Korni, Dr. M. A.	Saha, Mr. K. N.
Kundu, Mr. M. N.	Sanyal, Mr. N. B.
Kundu, Mr. Sibendranath	Sayers, Mr. S. T.
Kundu, Mr. Sudhendranath	Sen, Mr. B. K.
Larymore, Mr. S. E.	Sen, Mr. H. C.
MacPherson, Rev. G. C.	Sen, Mr. J. C.
Mandal, Mr. G. C.	Sen, Mr. N. C.
Miles, Mrs. W. H.	Sen-Gupta, Mr. J.
Mookerjee, Mr. H. K.	Seth, Mr. S.
Mukerjee, Mr. D. D.	Shaha, Mr. P. C.
Mukherji, Rai Bahadur I. C.	Shastri, Mr. Narayana
Mukherji, Mr. S.	Shastri, Pt. Sita Ram
Nahapiet, Miss Pearl	Sommerfeld, Mrs. A.
Nandy, Mr. Suresh Ch.	Stapleton, Mrs.
Natesan, Mr. L. A.	Townend, Mr. T. J.
Oven, Dr. H. G. von.	Urchs, Mrs. P.
Pakenham-Walsh, Rt. Rev. H.	Vermiere, Rev. M., S.J.
Pakenham-Walsh, Mrs.	Watling, Mrs.

and many others.

The President in declaring the meeting open said :—

“Ladies and Gentlemen, Voting papers for the election of the new Council and for the election of Ordinary Fellows will be distributed to all Ordinary Members present.

I request the Ordinary Members present to deliver their votes in the collecting box which will be handed round to them, and appoint Lt.-Col. R. Knowles, I.M.S., and the Rev. A. Willifer Young to be scrutineers.”

The President then ordered the distribution of copies of the Annual Report for 1929, and called upon the General Secretary to make a few remarks on it.

The Annual Report was then presented. (See page xxxiv.)

The retiring President then addressed the meeting. (See page ix.)

The retiring President then called upon the scrutineers to report and announced the results of the Council election. (See page xxi.)

The retiring President then gave place to the President for 1930, who thanked the Society briefly, as follows :—

“Ladies and Gentlemen, I thank you very much for the honour that you have conferred upon me by electing me your President. It is an honour of which I shall always be proud. My first duty as your President is to ask you to express your appreciation of the services of your outgoing President, Dr. Brahmachari.

I should like to remind you of certain words that Dr. Brahmachari used in his Presidential Address last year. You, Sir, then said—‘I feel I should not honour your choice, if I did not wish to prove myself at least the equal of my predecessors in a fervent desire to discharge efficiently my duties as President

to the credit of the Society, and to advancement of science and literature.'

I feel that you will agree with me, Ladies and Gentlemen, that Dr. Brahmachari has splendidly fulfilled that wish.

During the tenure of office as President, he has instituted a gold medal in honour of our Founder, Sir William Jones; he has contributed handsomely to the Library Endowment fund; and has very materially assisted in the increase in the number of our members. Throughout his whole period of office he has set us an example of whole-hearted devotion to the Society and in return the Society owes him a deep debt of gratitude. I ask you, Ladies and Gentlemen, to express your appreciation of his services in the usual manner."

The President for 1930 then declared, on report of the scrutineers, the following candidates duly elected Ordinary Fellows of the Asiatic Society of Bengal:—

Lt.-Col. H. W. Acton,
Dr. Gerald de P. Cotter,
Dr. Sunder Lal Hora,
Mr. J. P. Mills, and
Dr. Meghnad Saha.

The President for 1930 announced that the Trustees of the Elliott Prize had reported that no paper had been submitted in competition for the year 1929, which had been for the subject of Chemistry and that a prize would be offered for 1930, subject: Physics, about which a detailed announcement had been published in the "Calcutta Gazette" during the month.

The President for 1930 then announced that the Barclay Memorial Medal is awarded each alternate year to that person who, in the opinion of the Council, has made conspicuously important contribution to medical or Biological science with reference to India.

This year the medal is awarded to Mr. Albert Howard, C.I.E., M.A., Director, Institute of Plant Industry, Indore, and Agricultural Adviser to States in Central India, Indore.

The President for 1930 called upon the late President, Dr. Brahmachari, to receive the medal, and addressed him as follows:—

"Dr. Brahmachari, I have great pleasure in handing over to you on behalf of the Asiatic Society of Bengal the Barclay Memorial Medal for the year 1929, and I request you to transmit it to Mr. Howard and convey to him our sincerest congratulations."

"I thank you very much for your courtesy in coming over here this evening to receive this medal on his behalf."

The President for 1930 then announced that the Joy Gobind Law Memorial Medal had been instituted last year, and it is to

be awarded every three years to that person who, in the opinion of the Council, has made conspicuously important contribution to our knowledge of Zoology in Asia.

This year the medal is awarded to Prof. Max Weber.

"Dr. Max Weber is the Emeritus Professor of Zoology in the University of Amsterdam. He has contributed largely to our knowledge of the Fauna of Asia and the Asiatic region by his share in the Siboga Expedition to the Malay Archipelago, of which he was the Director. He has also done much work on the Indo-Malayan fishes."

The President for 1930 then called upon Dr. H. G. von Oven to receive the medal, and addressed him as follows:—

"Mr. Consul-General for the Netherlands, I have great pleasure in handing over to you on behalf of the Asiatic Society of Bengal the Joy Gobind Law Memorial Medal for the year 1929, and I request you to transmit it to Prof. Weber together with our sincerest congratulations."

"I thank you very much for your courtesy in coming over here this evening to receive this medal on his behalf."

After these announcements, the President for 1930 declared the Annual Meeting to be dissolved and invited the guests present to examine a collection of exhibits at the other side of the hall, and requested the Members present to re-assemble around the table for an Ordinary Monthly Meeting for the election of Members and the transaction of business. (For a descriptive list of the exhibits, see page xxii).

ANNUAL ADDRESS, 1929-30.

LADIES AND GENTLEMEN,

A year has rolled by since I had the privilege of being re-elected by you as President of the Asiatic Society. I said last year that the Code of Laws of the Society of 1869 requires an annual address from the presidential chair at the anniversary meeting of the Society. In obedience to this code, I address you for a second time. I shall begin by giving a brief summary of matters of importance which have happened to our Society during the two years of my term of office as its president.

The financial condition of our Society has improved in one important respect, due to our having been able to lease out portions of our land on very satisfactory terms, which will give us an increased yearly income of over Rs. 12,000. I am glad to be able to add that, on the cogent representation of the General Secretary, our Council have very wisely adopted the policy of contributing Rs. 10,000 every year out of this income to our permanent reserve fund, which is at present dangerously under-endowed, so that after another ten years' time the annual permanent income of our Society may be expected to increase by about Rs. 5,000.

We have published works of high intrinsic value of some of our members. I refer especially to the work of Mr. Shaw and Dr. Hutton, on the Thado Kukis, the manuscript of which was entrusted to us by the Government of Assam for publication in our *Journal*.

Our *Memoirs* during 1928 and 1929 contained important papers on Oceanography by Col. Sewell, on Linguistics by Sir George Grierson, and on Tours East of the Naga Hills by Dr. Hutton. We published certain very valuable works in our *Bibliotheca Indica* during the period, amongst which special mention should be made of the third part of Sir George Grierson's *magnum opus*, his Kashmiri dictionary, which is now approaching completion after twenty years of toil. Dr. Caland's masterly translation of the *Vaikhāṇasa-Smārta-Sūtra* deserves equal mention.

I am glad to find that the Rivers Memorial Medal in Anthropology for 1929 has just been awarded to Dr. Hutton in recognition of his services to Anthropology in Assam.

We are zealously continuing our task of cataloguing the books in our library, which is a most arduous undertaking. The arrears in the publication of papers in our *Journal* and *Proceedings* have been materially diminished. All this good result is no doubt to a large extent due to the indefatigable energy of my friend, Mr. Johan van Manen, our General Secretary. I am

very glad to be able to congratulate him on the conferment on him by His Majesty the King Emperor of the title of Honorary Companion of the Indian Empire.

In 1928, I had the privilege of giving away the first award of the Sir William Jones Memorial Medal to Sir Malcolm Watson for his well-known researches in Malariology, which have led to a remarkable reduction of malaria in the Federated Malay States, and in 1929 the second award to Sir George Grierson, than whom I cannot think of any scholar more renowned for Asiatic Researches in Philology in recent times.

The same year I also had the occasion of giving away the triennial award of the Annandale Memorial Medal for Anthropology to Dr. Fritz Sarasin of Switzerland for his researches in Asiatic Anthropology and the Barclay Memorial Medal to Dr. Stanley Kemp, Director, Discovery Expedition and formerly of the Zoological Survey of India. We have awarded the first Joy Govind Law Medal in Zoology to Professor Max Weber of the University of Amsterdam for his researches in Asiatic Zoology.

It will be seen from the above that our medallists in different branches of study have been men of the highest order in their respective subjects.

The number of members of our Society in 1928 was the largest in its records and it was maintained at almost the same figure last year.

Last year we elected two new Honorary Fellows. One is Sir Rajendra Nath Mookerjee, as much loved as respected, the acknowledged leader of all good causes in Bengal, and the *doyen* of our public men. The other is Dr. Charles Nicolle, of the Pasteur Institute of Tunis, of universal fame throughout the medical world for his discoveries in Medicine. We are proud of having these two additional names on our roll of honour.

Though the income of our Society has increased, it is quite inadequate to meet the legitimate demands of our various activities, which cannot be fully expanded owing to lack of sufficient means. We require much larger sums of money for the maintenance and expansion of our library; for the reprint of many volumes in our *Bibliotheca Indica*, now entirely sold out; for the strengthening of our office staff; for our periodical publications; for the creation of readerships under the auspices of our Society; for funds for research in different branches of study; and for many other activities which we aspire to undertake and which are our natural and legitimate concern.

With these remarks I pass on to the special subject of my address this evening which is:—

THE TREATMENT OF A FEW TROPICAL DISEASES IN INDIA IN RECENT TIMES.

This is a subject which must appeal to any person interested in human life in the Tropics, be he a member of Government,

a politician, a literary man, a lawyer, a medical man, a scientist, an engineer or one engaged in trade and commerce or any other sphere of life.

CHOLERA.

I shall begin with CHOLERA. When in the year 1868 D. B. Smith wrote in Calcutta his "Notes on the Treatment of Cholera" and pointed out the value of the injection of a saline solution into the veins in the treatment of the disease, a treatment that was first introduced about a century ago in the first Epidemic in England of 1831-32, he did not know that he was anticipating one of the most modern treatments of the disease in India that was subsequently introduced by Sir Leonard Rogers. I make the following quotation from D. B. Smith's notes. He said "The injection of warm water and of saline solutions under the skin or into the veins, produces a marvellous effect in advanced cases. I shall never forget the first time I saw this plan of treatment adopted. It was in the case of a very old woman who was 'moribund' from cholera. Her deeply sunken eyes, cold surface, shrivelled skin, and pulseless wrist, held forth no hope. The fluid was injected; within a minute the poor creature revived as if from death, sat up in her bed, and blessed those who were standing round her."

It was justly remarked by Mackinnon more than half a century ago that the treatment of cholera by saline injection "approaches more nearly to an immortal discovery than anything in medical practice of late years".

It is difficult to trace exactly how the treatment of cholera with intravenous saline injection fell into disuse for many decades, till the more modern researches put it on a scientific basis. I think it must have been due to improper knowledge about its indications and its indiscriminate use, which not infrequently gave rise to untoward results. We now know, much more definitely than fifty years ago, the indications for intravenous saline in cholera; when it is likely to be beneficial or when it is likely to do harm. We now know that the blood-changes in cholera constitute the key to the treatment with intravenous saline. At the present day, we are guided as to the strength, the composition and the dose of intravenous saline in a particular case of cholera by observations on the blood pressure, the specific gravity, and the alkalinity of the blood. These recent advances have reduced the mortality to a remarkable degree.

The still more recent advance in our knowledge of diseases like cholera is the discovery of the bacteriophage by Dr. F. d'Herelle. I shall not try to enter here into a discussion of the constitution of the ultra-microscopic particles of the bacteriophage that develops along with the special virus of certain diseases like dysentery and cholera, and subsequently brings about its complete destruction. This discovery constitutes one

of the most marvellous advances in Tropical Medicine in recent times and will sooner or later completely revolutionize our ideas about the treatment of cholera and allied diseases. Researches in this direction are at present being carried on in India by Dr. Asheshov in Patna, by Lt.-Col. Taylor in the Pasteur Institute in Rangoon, and by Lt.-Col. Morison in the Pasteur Institute in Shillong where he showed me the remarkably destructive action of the bacteriophage on cultures of different strains of cholera bacilli.

In passing, I refer to recent treatments of cholera by oral administration of drugs such as permanganates, or kaolin, which were used extensively during the last European war, and to the revival of the old treatment of cholera with volatile oils.

Attempts have been made to prepare therapeutic sera in the treatment of cholera and certain recent researches in this direction point to the possibility of hopeful results in the future. Some of these sera have recently been made available in the market, such as Behring's anticholeraic serum. Further, I conceive that with the advance of chemotherapy, a specific drug will at some future date be discovered for cholera.

A word about the protective vaccination against cholera which was used with success by Haffkine in India some years ago. Though the curative treatment of the disease by vaccine has not yet been a success, our experience in its use as a prophylactic measure indicates that this treatment bids fair to become one of our strongest weapons against attacks of the disease during an epidemic. It was recently introduced in Bengal by the Government of His Excellency Sir Stanley Jackson during the ministry of The Hon'ble Alhadj Sir A. K. Ghuznavi and was used on an extensive scale by Dr. Bentley with great success, as a campaign against the disease. I shall now quite briefly refer to the work on the *antivirus* of Besredka in the preventive treatment of cholera. He has shown that the addition of a sensitizing agent, in the form of bile, would make the oral administration of vaccines successful in cholera and upon this depends the value of bili-vaccines. Lt.-Col. Russel of Madras has recently shown that bili-vaccine given by the mouth is not so powerful in its action as anticholeraic inoculation.

MALARIA.

I would now refer to the subject of the treatment of MALARIA in recent times. It is a significant fact that in spite of the vast strides in our days in synthetic chemistry and in chemotherapy, quinine, or perhaps the total cinchona alkaloids occurring in nature, still constitute the basis of all the recent advances in the treatment of malaria. Chemists have as yet failed to prepare them synthetically. That being the case,

I shall, for a moment, digress into the region of ancient history and tell you something about the discovery of the cinchona bark. The precise period and manner of the discovery of the therapeutic power of cinchona are enveloped in mystery. Some writers believe that the Red Indians were acquainted with it long before the arrival of the Spaniards, while others hold that they were ignorant of its medicinal qualities until the Spaniards discovered them.

The traditions of the mode of discovery of its remedial power are of a very fabulous character. One is that a Red Indian was cured of ague by drinking at a pool into which some cinchona trees had fallen. Another is that the Indians observed that the American lions, when ill with ague, ate the cinchona bark. A third is that the Jesuits accidentally discovered the bitterness of the bark, and tried an infusion of it in tertian ague.

Cinchona bark was probably imported into Spain in 1632 though no trial was made of it until 1639.

The belief that the Countess of Chinchon, wife of the Viceroy of Peru, brought some bark to Europe in 1639, is not improbable. About ten years afterwards, it was carried by the Jesuits to Rome and used by them with great success in agues. It fell, however, into disuse, but was again brought into vogue, in France, by Talbor, who acquired great reputation for the cure of intermittents by a secret remedy. Louis XIV purchased his secret (which proved to be cinchona), and made it public.

From the above account, one fact is certain, namely, that the knowledge of the value of cinchona bark in the treatment of malaria has come down through centuries to the civilized world from people considered as savages.

The most recent method of administering quinine by the mouth consists of giving it by what is known as Sinton's method. This appears to my mind to be a reversion to the rather old method of giving the drug in an effervescent mixture obtained by mixing a solution of quinine in citric acid and water in one vessel with a solution of sodium bicarbonate in water in another. I frequently noted this method of administering quinine in my student days. It was then considered that by this method quinine could be borne more easily by patients with an irritable stomach or by those who could not bear it if given in an ordinary acid solution.

Intravenous injection of quinine has recently been strongly advocated in the treatment of malaria by certain observers who consider the method to be free from danger. It has, however, never been so popular as the intravenous injection of other drugs. It appears to me that untoward results following intravenous injections of quinine are very rarely reported.

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BLACK WATER FEVER.

BLACK WATER FEVER, a disease that
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of Tropical Medicine and I do not think that much advance has been made in this direction. In cases of this disease, if it is found indispensable to administer quinine, it should be given in the form of an anti-haemolytic quinine solution which was suggested by me a few years ago. The value of plasmochin in this disease has yet to be established.

KALA-AZAR.

I would now make a few observations on the subject of KALA-AZAR.

Though we are still in the dark as to how the disease is propagated, the recent discoveries in the treatment of the disease constitute one of the greatest advances in Tropical Medicine.

They have revolutionized our ideas about its mortality which has been reduced from 95 per cent. to 5 per cent. or even less. It was doubtless a very great advance in the treatment of the disease from massive doses of quinine to tartar emetic which was the first antimony compound introduced for the treatment of kala-azar by Rogers in India, by Castellani in Ceylon and by Cristina and Caronia in Italy. Soon after its introduction, I conceived the idea of using sodium antimonyl tartrate, sometimes called Plimmer's salt, and the original bottle containing the first sample of this compound used by me more than 15 years ago is still preserved. Tartar emetic was soon replaced by this compound.

The next step in the treatment of the disease was the introduction of the intravenous administration of metallic antimony in a state of very fine subdivision, which was attended with remarkable benefit. It has recently been pointed out by me that when injected intravenously the particles of antimony are picked up by the same cells in the spleen as those that harbour the parasites of kala-azar, that the two contending agents thus come in closest contact with each other in these tissue cells, and that the fight ends most remarkably in the complete destruction of the parasites in the speediest way.

The next further advance in the treatment of kala-azar was the introduction of certain organic compounds of antimony.

The use of these compounds in kala-azar infection has been the subject of my research for many years. In 1920, some of these compounds were prepared for the first time in India in my laboratory in the Calcutta Campbell Hospital, and I immediately brought to the notice of the Governments of Bengal and of India the potentialities of these compounds in the treatment of Indian kala-azar and also pointed out to them that the manufacture of these compounds in India for use against kala-azar would be as important as the plantation of cinchona for treatment of malarial fever.

Early in 1921, in the course of my research, I discovered an urea antimony compound for the treatment of kala-azar.

Its introduction and my other researches on antimonial compounds opened up a new vista in the treatment of the disease in India, by means of therapeutic organic antimonials. This urea compound I named "urea stibamine".

I shall not detain you here with the romance of urea stibamine, however interesting it may be. But I recall with delight that memorable night in the Calcutta Campbell Hospital at Sealdah when after a very hard day's work at about 10 P.M. in a little room with a smoky dimly burning kerosene lamp, I found that my experiments in the preparation of this compound were up to my expectations. But I did not then know that night that Providence had put into my hands a wondrous thing and that this little thing would save the lives of millions of my fellow-men.

Its toxicity was soon found to be low. I gave the first injection to my patient with a dubious mind. The results were remarkable and surpassed all my expectations. Feelings of hope, however, alternated with those of depression, as it was a matter of extreme difficulty to prepare the compound in its purest state and sometimes I despaired of success. My assistants always stood by me in my moments of despair and with youthful hopes strengthened my mind. I carried on my observations incessantly not without some inconvenience to the practice of my profession as a consulting physician. The first series of cases treated with this compound were published early in 1922; soon after this, most remarkable results were obtained with it by Major Shortt in Shillong to whom I had sent the compound for trial at the request of Col. Greig, Director of Medical Research in India.

The value of this compound was quickly recognised from the reports of my cases in Calcutta as well as of those obtained from Shortt and other Directors of the Pasteur Institute, Shillong, from Christophers, Director of the Kala-azar Commission, from medical officers of tea estates in Assam, and from the Government of Assam. Its reputation soon spread all over Assam, Bengal, Bihar and Orissa, and to more distant places in India, such as, Madras, Sanawar, the Simla Hills, and other places too numerous to mention, and every observer who used the drug was convinced of the great advance made by its adoption in the treatment of kala-azar.

It was introduced soon, after a preliminary experimental trial, by the Government of Sir John Kerr, as a preventive measure against the disease in Assam.

While discussing with the Director of the Calcutta School of Tropical Medicine the therapeutic value of this compound, soon after its discovery, I pointed out and suggested to him the possibility of obtaining therapeutic aromatic antimonials from the Chemische Fabrik von Heyden, the only compound of that nature then available in England being stibenyl, and this

suggestion of mine was quickly followed by the introduction of von Heyden's preparations into this institution for the treatment of kala-azar.

To-day urea stibamine stands pre-eminent in the treatment of kala-azar in India and as a powerful prophylactic against the disease, and it is a matter of supreme satisfaction that the treatment evolved out of my research has saved the lives of millions of sufferers in my country.

The following extract from the speech of His Excellency Sir John Kerr, while bidding farewell to the Legislative Council in Assam in 1926, shows the value of the campaign against kala-azar by mass treatment of the disease. His Excellency remarked: "We may now say that victory, if not in sight, is assured. The progress in the campaign against kala-azar in Assam has been phenomenally rapid, and if it continues at the present rate, there is an excellent prospect of the dread scourge being brought under complete control in a few years."

The last word about the treatment of kala-azar has not, however, yet been said, though we are nearer to it than in the case of any other tropical disease. It may be hoped that an antimony compound will be discovered which it will be possible to administer with benefit by the mouth, through the progress of synthetic chemistry. I would refer here to a new antimony compound prepared in my laboratory which, as was shown a few weeks ago in the meeting of the Medical Section of our Society, could be administered intramuscularly with benefit to the patient. A paper on this compound has been communicated by me and my collaborators to the Journal of Royal Society of Tropical Medicine and Hygiene.

General Gorgas, speaking in 1914 on yellow fever control, stated that its eradication would command the attention and the gratitude of the world and that the thing could be done. To-day, yellow fever is fast disappearing from the Americas. The same will one day be said of kala-azar, and it may be hoped that before long the disease will be completely banished from India and other parts of the world where it occurs.

That day will be the happiest and proudest day of my life, if it falls to my lot to see it. I shall never forget that little room where urea stibamine was discovered, the room where I had to labour for months without a gas point or a water tap, and where I had to remain contented with my old kerosene hurricane lamp for my work at night. The room still remains but the signs of a laboratory in it have completely disappeared. To me it will ever remain as a place of pilgrimage, where the first light of urea stibamine dawned upon my mind.

Ladies and Gentlemen, I have described to you briefly the recent advances in the treatment of a few diseases in India. In some of the Tropical Diseases the progress has been marvellous but we know there are others in which most intensive research

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Ladies and Gentlemen, I have described to you briefly the recent advances in the treatment of a few diseases in India. In some of the Tropical Diseases the progress has been marvellous but we know there are others in which most intensive research

must still be continued before any real advance could be made. I think that in this, the students of medical colleges and schools in India must play a very prominent part in the future. It is up to them to demand and utilise to the full the facilities for research in diseases prevalent in their own provinces. It is up to them to educate their people in the laws of health and in the application of preventive measures against diseases like malaria and cholera. No State alone can help a community in sanitary improvements unless the people themselves co-operate. And in this, the medical profession in India must play a most important part aided, as they must be, by the State.

In recalling the history of our profession, one finds the remarkable changes that have taken place especially in India during the last quarter of a century. When I recall to mind that I had the privilege of teaching and examining many hundreds of medical students in Medicine and remember the raw and restive youths to whom I lectured, and then look around and see the resulting product, I feel with Sir Ernest Rutherford that a transformation has occurred that is much more wonderful than the transformation of radium and must have involved much more energy in the process. The application to Medicine of scientific methods evolving out of the ancillary sciences such as bacteriology, bio-chemistry and chemotherapy is specially noticeable in the case of Tropical Diseases. India, the seat of earliest civilization of man, is regaining the healthy state that she must have enjoyed in the days of old. Diseases which for centuries were considered incurable and destroyed millions of human lives in India are now losing their terrors.

The result of the application of advances in the above-mentioned sciences to Medicine must, in course of time, lead to most remarkable discoveries for the relief of human suffering. There is no doubt that in future, more funds and more help will be available to extend the bounds of that scientific work which lies at the basis of Medicine, and that there will be an international attack on the problem of the diseases that afflict mankind, irrespective of the fact whether they occur in the tropics or in cold climates. We look forward to the day when all progressive Governments of the world would co-operate in the solution of this problem, in which the League of Nations should be able to participate to a much greater extent with more funds at its disposal for the purpose than at present. The Rockefeller Foundation, whose motto is THE WELL-BEING OF MANKIND THROUGHOUT THE WORLD, has already been doing good work in this direction.

The hope of India rests upon the ever-growing success and usefulness of our profession. Science has advanced in recent times in various directions and we have seen many wonderful things accomplished which could scarcely have been imagined

30 or 40 years ago. There is one thing which all of us will always wish for, and that is long life and health, which are especially wanting in the Tropics. As Col. Christophers recently stated in his Presidential Address in the last Indian Science Congress, "Of the three great terrors Sword, Famine and Pestilence, Pestilence, if we mean by this Disease, has easily first place." It is yet a dream to conceive that Science will conquer death from the terrible accident of disease and that death will only happen in the natural process of decay just as the living cell decays after having become worn out. If ever there is to be the consummation of that dream, then it can only be after patient study and prolonged research in Medicine and its ancillary sciences.

Ladies and Gentlemen, Medical research is specially needed in India and other tropical regions where diseases are more common than in colder places. The value of such research and the urgent need of encouraging it among students of Medicine cannot be over-emphasized. We know that kala-azar is in retreat in India and yellow fever in the Americas and that these results have been products of research. But we also know that a hundred million sufferers from malaria are still awaiting relief in India and that epidemics of diseases sometimes destroy more human lives than any war that man can conceive of. To mitigate these evils new methods and remedies must be discovered. There must be more research workers in the field of Medicine than at present. Sir Walter Fletcher, in a recent speech, declared that the remedy for the dearth of research workers lay in the adoption of a policy of securing to research workers adequate pay, reasonable security of tenure and a reasonable chance that distinguished success might be properly recognized. To these I would add freedom to the research worker in his work, for refusal of freedom would scare away the best research worker even if the terms of his service gave him a salary comparable to the earnings of successful men in other walks of life. The true worker in Science can bear no subjection to any master, however beloved or however high his position may be. In his work he can only serve and express the truth, fearlessly searched for, without any selfish or sectional allegiance.

In dealing with research workers there should be no jealousy, no distinction of caste or creed, no differential treatment on the part of those who have the privileged position of recommending sanction of money for research. There should be only one object, namely the well-being of mankind. No personal opinion or bias should retard the progress of scientific research, even if the attitude of a research worker were not to one's own personal taste or inclination.

We hear of research workers suffering from the terrible effects of X-rays or of a fatal disease contracted in the process

of their investigation. These men are martyrs to science. Similarly we hear of research workers who, after strenuously working exclusively for the sake of science, without any personal remuneration and at the sacrifice of their health, energy, and means of living, are disturbed and harassed by some one in power in the midst of their research and on the eve of some valuable discovery. Such men are also martyrs to science and those responsible for their troubles are enemies to science and human well-being. They are guilty of hindering the progress of knowledge which may be irreparable, and of forcing some of nature's laws to remain in obscurity, to the detriment of human happiness for many years, or it may be, for ages to come.

I wish I had time to tell you of the sorrows and troubles of research workers. The story how Ronald Ross began his researches as a self-imposed duty, how he was harassed, how his epoch-making discovery of the part played by mosquitoes in the propagation of malaria could only be made by the sympathetic intervention of Patrick Manson and how he suffered from financial troubles is at once a romance and a tragedy. Alas! for such a man it has now been found necessary to ask for donations in order to save him from pecuniary difficulties in the evening of his life. I have mentioned this story for it brings home to us the fact that men devoted to research should be better treated, and be encouraged and properly recompensed.

I now come to the end of my address.

It would ill become me to venture to refer to the name of my presumed successor in the Chair of this Society in any terms which might be interpreted as an undue anticipation of the result of this evening's proceedings, or as aspiring to interfere with the free use of the franchise which members of the Society possess. But I cannot help referring to the various accomplishments, the courteous and unassuming manners, the warmth and benevolence of heart which distinguish the gentleman who has been nominated by the council; and I rejoice most sincerely that the Society possesses amongst its members as a candidate for our suffrages, one so well qualified to preside over our meetings, to watch over our interests and help us in our deliberations, and one who has won for himself so high an international reputation for his researches in a science, which he has made his lifelong study. May our Society prosper under the presidency of Lieutenant-Colonel Sewell.

U. N. BRAHMACHARI.

3rd February, 1930.

**OFFICERS AND MEMBERS OF COUNCIL
ASIATIC SOCIETY OF BENGAL, 1930.**

*Elected and announced in the Annual Meeting, 3rd February,
1930.*

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Lt.-Col. R. B. Seymour Sewell, M.A., M.R.C.S., L.R.C.P.,
Sc.D. (Cantab.), F.L.S., F.Z.S., I.M.S., F.A.S.B.

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B. De, Esq., M.A., I.C.S. (retired).
L. L. Fermor, Esq., O.B.E., D.Sc., A.R.S.M., F.G.S.,
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Shāstri, C.I.E., M.A., D.Litt., F.A.S.B.
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jab), D.Sc. (Edinburgh), F.R.S.E.
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Jas. Insch, Esq.
K. C. De, Esq., C.I.E., B.A., I.C.S. (retired).

EXHIBITION ANNUAL MEETING.

LIST OF EXHIBITS SHOWN AFTER THE ANNUAL MEETING OF
THE ASIATIC SOCIETY OF BENGAL, ON THE 3RD FEBRU-
ARY, 1930.

1. A. F. M. ABDUL ALI.

Miscellaneous Historical Documents.

- (1) Governor-General's minute on the subject of establishing a commercial intercourse with Tibet and the other Northern States. (Pub. A. 19-4-1779, No. 1.)
- (2) Letter from Mr. George Bogle, forwarding a report of his negotiations for the establishment of a commercial intercourse between Bengal and Tibet.
Translation of a letter from the Tashai Lama to Singh Pertab offering consolation on his father's death and advising him to attend to the happiness of his people and to allow all the four castes to trade freely in his country. (Pub. A. 19-4-1779, No. 2.)
- (3) Minute of the Governor-General (Sir John Shore) recommending that Lieut. J. Baillie (Arabic Scholar) be nominated to translate the law doctrines of the sect of Mussalmans called '*Shias*,' begun under the superintendence of the late Sir William Jones. (Pub. B. 26-1-1798, No. 1.)
- (4) Copy of a letter from Mr. A Seton, Assistant Collector of Calcutta to the Board of Revenue, discussing the ancient and present boundaries of the town of Calcutta.
Translation of a report submitted by certain officers of the Calcutta *cutcherry* upon the ancient and present limits of the town of Calcutta. (Pub. A. 4-7-1787, No. 30.)
- (5) Letter from Mr. T. Motte to Mr. J. White (Deputy Secretary, Public Department) reporting on the boundaries of the town of Calcutta, and detailing the variations they have undergone. (Pub. A. 16-11-1787, No. 31.)
- (6) Statement made by certain leading inhabitants of Calcutta testifying to the high cost of living at the place. (Pub. B. 14th February, 1787, No. 31.)
- (7) Government of Bengal's proposal for the appointment of Honorary Magistrates in some of the Districts of Bengal. (Public A. 7th August, 1857, No. 9.) Government of India's approval. (Pub. A. 7th August, 1857, No. 10.)
- (8) Letter from Mr. John Prinsep proposing to remove the obstacles impeding the general circulation of the new copper coinage on any commission that he may be allowed, and showing how it will be impossible for him to effect any fraud. (Pub. 1st April, 1782, No. 21.)
- (9) Copy of a letter from the Commissioners of Police transmitting a complete estimate of the value of all the shops, lands, houses, tenements, and hereditaments in the town of Calcutta as well as the assessment of a tax for the year 1781, intimating that for the present the full tax permitted

- by the ordinance must be levied (*viz.* Sicca Rs. 2,02,940), and requesting the Board to signify their approval of the assessment in writing. (Pub. A. 2nd July, 1781, No. 1.)
- (10) Letter from the Commissioners of Police submitting a new plan for conducting the duties of scavenger in the town of Calcutta. Plan mentioned before. (Pub. A. 7th April, 1785, Nos. 43 and 44.)
 - (11) Letter from Mr. T. Motte, Superintendent of Police to the Governor-General asking for the appointment of a joint Superintendent of Police to help him, proposing, with a view to suppress robberies, the registration of menial servants and coolies in Calcutta, and enclosing a plan of the same with a table of wages. (Pub. 21st March, 1785, Nos. 41 and 42.)
 - (12) Minute of the Governor-General proposing that Pandit Jagan-nath Tarkapanchanan may be appointed to assist Sir Wm. Jones in compiling the Digest of Hindu and Muham-madan Laws on a salary of Rs. 300 a month and Rs. 100 for assistants. (Pub. A. 22nd August, 1788, No. 23.)
 - (13) Letter from the Board of Trade stating particulars of goods etc. and that the Library and manuscripts of the late Sir Wm. Jones be sent home and delivered to Lady Jones in England free of charge by way of a token of respect to the memory of the deceased. (Pub. C. 11th April, 1796, No. 11.)
 - (14) A statement of the fifty Lakhs to be paid by Shujaud-Daulah. A statement of the King's debt to the Company. This is in the hand-writing of Lord Clive. (Pub. 9th September, 1765, No. 13.)
 - (15) Copy of a letter from Mr. G. Udny (Resident at Maldah) to the Board of Trade, suggesting remedies for the improvement of the manufacture of muslins in the Malda *Aurangs*. (Pub. A. 28th December, 1787, No. 2.)
 - (16) Capture of Tantia Topi's family by Sindhia Subah of Bhind. (Sec. 24th September, 1853, No. 123.)
 - (17) From Tipu Sultan. Asks the Governor-General to depute an ambassador to his Court or allow him to send one to Madras in order to remove the estrangement that has sprung up between them. Encloses a list of presents accompanying the letter. Bears the seal of the Sultan. (Pers. 18th February, 1791, No. 35.)
 - (18) From Tipu Sultan. In reply to Governor-General's offer to send to the Sultan's camp the corpse of Bahadur Khan who fell fighting gallantly at Bangalore, says that the body may be handed to the local Mussalmans for burial. Bears the Sultan's seal. (Pers. 23 March, 1791, No. 78.)
 - (19) Letter from Mr. Wm. Hodges to the Governor-General tendering his thanks for the patronage received by him as a painter, and enclosing for transmission to the Company five pictures of the Forts of Agra and Gwalior, the Gate of the tomb of Akbar and the palace of the Nabob Vezier of Lucknow. (Pub. 13th November, 1783, No. 50.)
 - (20) Letter from Major Wm. Popham enclosing a plan of the fortress of Gwalior and submitting proposals for completing its defences. (Pub. 10th October, 1780, No. 3.)
 - (21) Governor-General's proposal for reporting the capture of Gwalior to the Court of Directors. (Pub. 28th August, 1780, No. 4.)

2. C. A. BENTLEY.

A Dozen Vitamin Diet Diagrams.

Vitamin is a term now employed to designate certain substances contained in foods, of which the exact nature is not known, but which have been shown to be necessary to the normal development of young animals, as well as to the maintenance of health and well-being in adults.

Processes of artificial preparation of food destroy them or weaken their action.

Hitherto five such substances have been defined, the latest, Vitamin E, being necessary for breeding power.

The conception of Vitamins was first described by the Belgian Dr. Eugène Wildiers, in 1901, but his discovery was not noticed at the time and his conclusions were once more arrived at independently about 12 years later.

The set of charts illustrates the rôle played by these Vitamins, the deficiency-diseases arising from their absence from the diet, the Vitamin content of various kinds of foods, and the influence of Vitamins on growth.

3. KALIPADA BISWAS.

Organisms in Tap Water of Calcutta.

During the last hot months some brownish scums were found in the Calcutta tap-water. An investigation has been made of the life-history of these organisms, which are illustrated in the plates. The predominant organisms observed are both animal and vegetable. Of the plants *Lyngbya ochracea* (*Leptothrix ochracea*—an iron-bacterium) and *Synedra affinis*, var. *fasciculata*, are the two predominant algae occurring in the material. Biological investigation of the Calcutta filter-works has been taken up.

4. O. CLEGHORN.

(1) *Hand-woven and embroidered cloth lent by Mr. R. Dalglish.*

The cloth was woven on a hand-loom in a village in the interior of Cyprus. The weaving was done in a small room in which silk-worms were also being reared.

(2) *Hand-loom and vertical Warping Board.*

This is an ancient type of loom and method of warping but it is inexpensive and well suited for cottage workers. The rug of over 8 ft. in length can be warped and woven in the small spaces occupied by them.

The original is in use in the Tippera and Darjeeling districts; the present specimen is slightly improved for modern requirements.

5. HEM CHANDRA DAS-GUPTA.

A section of green earth.

From Linga (Central Provinces). Showing a remnant of basalt from an alteration of which the green earth (inter-trappean) has been formed.

6. THE GENERAL SECRETARY.

(1) *The Society's publications of 1929.*

- (a) Bibliotheca Indica.
- (b) Catalogues.
- (c) Journal.
- (d) Memoirs.
- (e) Proceedings, Indian Science Congress.

(2) *Some acquisitions of interest to the Library during 1929.*

- (a) Presentations.
- (b) Purchases.

(3) *Some recent publications by Members of the Society.*

Albert and Gabrielle L. C. Howard : The application of Science to Crop-production. London, 1929.

P. O. Bodding : A Santali Dictionary, Vol. I, part I : A. Oslo, 1929.

P. O. Bodding : Materials for a Santali Grammar. II. Mostly Morphological. Dumka, 1929.

P. O. Bodding : A Santali Grammar for Beginners. Benagaria, 1929.

Kedarnath Das : Obstetric Forceps. Calcutta, 1929.

Sir Aurel Stein : Innermost Asia. 3 Vols. Oxford, 1928, and atlas.

C. S. Middlemiss : Bauxite Deposits of Jammu Province. Jammu, 1928.

Prabodh Chandra Bagchi : Deux lexiques Sanskrit. Chinois, Tom.

1. Paris, 1929.

Prabodh Chandra Bagchi : Le Canon Bouddhique en Chine. Tom.

1. Paris, 1927.

J. Bacot : Les śloka grammaticaux de Thonmi Sambhota. Paris, 1928.

(4) *Catalogue of Sanskrit Manuscripts in the Society's Collections, by M.M. Haraprasad Shastri.*

(5) *A Monolith from North Cachar.*

This carved Monolith was presented to the Society by Mr. J. P. Mills. It is to be described in an article in the Society's *Journal* by Dr. J. H. Hutton and Mr. J. P. Mills.

7. THE GEOLOGICAL SURVEY OF INDIA.

(1) *An anomalous association of cretaceous dinosaurs and pleistocene mammalia.*

In several localities in the Trichinopoly district the soil overlying the Cretaceous rock formation has been found to contain mingled mammalian and dinosaur remains, all similarly encrusted with hard calcareous matter. The exhibit shows a few of these fossils, including in addition to the dinosaurs, species of ox (*Bos*), an asinine form of horse (*Equus*), pig (*Sus*), and hyaena, also a piece of fossil wood. Most of these were collected by Dr. C. A. Matley and Mr. P. N. Mukherji, Geological Survey of India, but the greatest interest

attaches to the jaws of hyaena and pig which were collected by the Geological and Zoological departments of the Central College, Bangalore under the supervision of Professor C. R. Narayana Rao and Mr. L. Rama Rao. The Pleistocene age of the mammalia is proved by the occurrence of *Equus*, and their attribution to the upper portion of the Pleistocene is rendered almost certain, by the fact that the pig is practically identical with specimens from the Upper Pleistocene cave earth of the Billa Surgam caves of Karnul, and also by the characters of the hyaena.

The latter remains are of special interest because they represent a species of hyaena which bears no relation to the modern striped hyaena of India, and seems equally not to be descended from the Lower Pleistocene hyaenas of the Upper Siwaliks. On the other hand it is allied to the modern spotted hyaena of Africa, a variety of which is found in the Pleistocene caves of Europe. We may perhaps infer that the Trichinopoly species of hyaena was a migrant during the glacial epoch—in fact a refugee from the arctic climate of Europe to the more genial regions of India and Africa, though it has survived only in the latter continent. Similar migrations are known in the case of species of elephant, pig, bear, tiger and lion.

Skulls of the modern Indian striped hyaena and of the Upper Siwalik *Hyaena colvini* and of the Billa Surgam hyaena are placed side by side with the Trichinopoly forms for comparison. A jaw of the modern Indian pig and of the Billa Surgam pig are also exhibited.

The explanation of the association of the dinosaurs with the mammals is probably that the former were derived from the underlying Cretaceous rocks, while the mammals represent the relics of patches of Upper Pleistocene alluvial deposit which formerly existed at such places. Subsequently to their having become mingled, the soil which contained them has been permeated by waters rich in calcareous matter, which has caused both dinosaurs and mammals to undergo a similar mineralization.

(2) *Fossil Wood.*

Three types of fossil wood are exhibited. Two are tree trunks devoid of bark. In one of these, which was found embedded in a porous sandstone, the woody substance has been entirely replaced by silica although the texture of the wood is preserved. This is a common form of silicified fossil wood. In the second specimen, which was embedded in impervious (clay) shale, the wood has been converted into *dull* coal. The infiltration of mineral-carrying waters is thus thought to effect the silicification of the first type, while the hermetically sealed condition of the second type evidently permits of coalification. In the third specimen of fossil wood, embedded in a porous arenaceous shale, both the bark and woody portion of a tree trunk are involved. In this case, the woody substance has been replaced by carbonate of iron, while the bark or cortical portion has been converted into *bright* coal. It is by no means uncommon to find silicified tree trunks with coalified bark (as bright coal). The bark invariably produces bright colour under whatsoever conditions it is entombed. The woody part, on the other hand, is coalified only when embedded under hermetically sealed conditions.

(3) *Glaciated Pebbles.*

Two types of glaciated pebbles are shown—each illustrated by an actual specimen taken out of an iceberg which had recently floated

away from the Greenland ice sheet and by specimens obtained from an ancient glacial (Talchir) boulder bed of Upper Palaeozoic age in the Punjab Salt Range. The one type—striated pebbles and boulders are of relatively soft rocks—has been scratched by the ice or by other fragments of rock in the ice. The other type—faceted pebbles are usually of a harder kind of rock—has been embedded in the glacier and ground against the rocks over which the ice moved. Specimens showing successive faces would appear to indicate that the pebble had been turned after polishing had been in progress some time.

(4) *Topaz Crystal*, Ghagidih, Singhbhum.

Topaz is frequently regarded as a precious stone, but actually only a very small proportion of topaz found in nature is of the precious variety. This crystal is relatively opaque and is of interest because of its unusual colour and large dimensions. It is also apparently a twin crystal—a rare phenomenon.

(5) *Nodule of Kyanite and Damourite*, Chapri, Singhbhum.

The broken surface of the specimen exposes the kyanite beneath the shell of fine damourite. Both minerals are aluminous silicates but of slightly different composition. These nodules are found in aluminous mica-schist. The kyanite was formed by segregation, and the damourite was developed as a result of later alteration of the kyanite.

(6) *Samaraskite*, Jogipalli, Nellore.

This is a rare mineral and is of particular interest as it contains the rare earth element, cerium, and the radioactive element, thorium. A cerium-iron alloy is used as the sparking medium for pocket cigar lighters, and cerium-thorium is used in incandescent mantles. This specimen is from a new locality in India.

(7) *Opalised Shell (Venus)*.

This shell was found on the surface at the opal fields, White Cliffs, South Australia. The calcium-carbonate of the shell has been completely replaced by opal (hydrated silica). The replacement was probably due to the action of percolating waters which derived their silica from the adjacent rocks.

(8) *A refractometer for the measurement of high refractive indices*.

The most convenient method of determining the refracting power of a mineral is by imbedding it in a liquid of the same refractive index and determining the refractive index of the liquid. For liquids of high refractive index the instrument shown may be used. It is arranged for use with a particular wave length of yellow light, which is produced by filtering the light from a mercury arc.

(9) *Rock and Mineral Specimens from South and Central Africa collected by Dr. L. L. Fermor, in 1929*.

The specimens shown are a small selection from a large collection made by Dr. Fermor while attending excursions of the XVth International Geological Congress held in South Africa in 1929. The

excursions started in the Cape Provinces, visited the Transvaal, Southern and Northern Rhodesia and the Belgian Congo. Northern Rhodesia and the Congo are parts of Central Africa, and it is of interest that one can now travel by corridor trains in the country where David Livingstone did his pioneer missionary work so recently as 1860-70.

Specimens from the Diamond Mine. The South African diamonds are mainly obtained from vertical pipes, often thousands of feet in diameter, which pierce various geological formations and are filled with rock that is considered to have come from very great depths (many miles). The matrix is known as kimberlite after the town of Kimberley; in this matrix are distributed the diamonds and also boulders of rocks torn from deep-seated layers through which the kimberlite magma has passed. These boulders are of great interest as they present us with samples of layers of the earth's crust many miles below the surface, and which, otherwise, would be inaccessible. The specimens exhibited comprise:—

No. Af. 17 of *Kimberlite* from the De Beers Diamond Mine, Kimberley. This contains fragments of various minerals, such as garnet, ilmenite and pyroxene.

Specimen Af. 11 is a piece of a boulder of *eclogite* from the Roberts Victor diamond pipe in the Orange Free State. It is a coarse rock composed mainly of garnets and a greenish pyroxene. *Eclogite* is of great interest, because it is regarded by some as forming a continuous shell at some 20 to 50 miles below the surface of the earth, and affording, by its possibility of transformation into less dense gabbro and basalt on release of pressure, the cushion upon which isostatic adjustments take place.

Specimen Af. 14 is from a boulder of *pyroxenite* obtained from the Bultfontein diamond pipe at Kimberley. It is of special interest on account of the bright green *chrome-diopside* that it contains. *Phlogopite* mica and another pyroxene are also seen.

Gold Ores. The Witwatersrand (or Rand) in the Transvaal is the source of supply of by far the larger proportion of the world's gold. There are also numerous gold mines in Southern Rhodesia. The gold of the Rand occurs in an alluvial pudding-stone known as *banket*, the gold being regarded by most as originally also of alluvial origin. The gold of Southern Rhodesia occurs in *auriferous quartz lodes* situated in the Archaean schists. Two specimens are shown:—

Af. 39 is a specimen of *banket* from the West Springs Gold Mine in the Transvaal.

Af. 120 is a specimen of *rich antimonial gold ore* with gold abundantly visible, from the Cam and Motor Mine in Southern Rhodesia. The difference between the richness of these two specimens is noteworthy. No visible gold is seen in the specimen of *banket* but only abundant iron pyrites or pyrits. It is, however, from this low-grade ore that the major portion of the world's gold comes.

Rhodesian Broken Hill Lead-Zinc-Mine. This mine, which is yielding zinc lead, and vanadium, has become famous for its beautifully crystallized minerals, and for a skull of a primitive form of man that was found in a cave in the ore deposit. The good crystals occur in fissures and cavities in the ore body. The following specimens are shown:—

Af. 166. *Tarbuttite* [$\text{Zn}_3\text{P}_2\text{O}_8 \cdot \text{Zn}(\text{OH})_2$]—a hydrated zinc phosphate, hitherto found only at this locality.

Hoperte [$\text{Zn}_3\text{P}_2\text{O}_8 \cdot 4\text{H}_2\text{O}$]—another rare zinc phosphate, found also in Belgium.

Af. 168. *Descloizite* [$4(\text{Pb}, \text{Zn})\text{O} \cdot \text{V}_2\text{O}_5 \cdot \text{H}_2\text{O}$] which is a hydrated vanadate of lead and zinc. This mineral is found in some abundance in the Broken Hill mine, and is used for the extraction of vanadium by a wet process.

Af. 170 and Af. 171 are two specimens of *Pyromorphite* ($3\text{Pb}_3\text{P}_2\text{O}_8 \cdot \text{PbCl}_2$). Many beautiful specimens of this mineral are found in the oxidised portions of the lode associated with limonite. The second specimen shows the limonitic gossan with small scattered pyromorphite crystals.

Copper Deposits of Northern Rhodesia. One of the most important mineral discoveries of recent years is that of the enormous copper deposits of Northern Rhodesia and the Belgian Congo. The copper ore occurs in disseminated grains in stratified deposits and is thought by some to be of sedimentary origin. The general view, however, is that copper sulphide has been subsequently introduced. The total tonnage of ore containing about 4% of copper as already proved is some 250 million tons, and the intensive geological prospecting operations at present being conducted may easily lead to the doubling of this quantity within the next few years. At the surface, the ores are oxidised into malachite, chrysocolla and various oxides, but these soon give way in depth to the sulphides—chalcocite and chalcopyrite. In much of the ore the copper is in the form of disseminated grains of chalcocite.

Specimen Af. 196 from the Roan Antelope Mine is typical of this disseminated ore.

Specimen Af. (?) from the Mufulira mine is a specimen of a borhole core obtained from a depth of about 900 feet from the surface, and is interesting as showing metallic copper.

Copper Deposits of the Belgian Congo. The copper deposits of the Belgian Congo are geologically somewhat similar to those of Northern Rhodesia.

The only specimen shown is Af. 218 of *Cornelite*, a beautiful blue hydrated phosphate of copper, $2\text{Cu}_3(\text{PO}_4)_2 \cdot 7\text{Cu}(\text{OH})_2$ from the L'Étoile du Congo copper mine near Elizabethville, Katanga, Belgian Congo. The oxidised zone of the copper deposits of the Congo is characterised by the presence also of cobalt minerals. The cornelite of this locality contains a small quantity of cobalt replacing some of the copper.

8. JAMES INSCH.

A collection of old Chinese ivory carvings.

This collection of delicately sculptured ivory figures illustrates some of the mythological conceptions of the thickly populated Chinese pantheon.

They may be divided into three groups.

In the first there is a complete set of the eight Immortals or Genii of the Taoist religion. (One of the eight is represented in duplicate.) (Nos. 1-8.)

Next, there is group of female deities: two Kuan-Yins (the Buddhist Goddess of Mercy); one Southern Ocean Kuan-Yin; one Queen of Heaven; two Heavenly Ladies or Spirits; and one pair, the Cowherd with his Spirit-wife the Weaving Fairy. (Nos. 9-15.)

The third group consist of some miscellaneous personalities: The God of Long Life or Star of Longevity; The God of Wealth; A Buddhist Arhan or Lohan, one of the eighteen guardians of Buddhism; and a Monk in meditation. (Nos. 16-19.)

Added in a fine specimen of incense burner in pagoda form. (No. 20).

For comparison some illustrations in Doré's work on Chinese superstitions are placed near some of the statuettes.

9. JOHAN VAN MANEN.

A set of Tibetan wind-instruments.

Music, both instrumental and vocal, is a prominent feature in lamaistic ceremonies. The principal instruments used are the drums, trumpet, flageolet, cymbals and conch shell. The set exhibited illustrates some forms of wind-instruments.

- (1) *Dung-chen* or long trumpet, a pair, 5 feet in length. Copper with ornamentations in white metal.
- (2) *Dung-chen*, id., a pair, 9 feet in length. Same type and material.
- (3) *Rgya-gling*, hautboy, wooden stem, metal mouth piece and mouth. Pair.
- (4) *Rkang-gling*, or *Rkang-dung*, fife, metal, plain. Pair.
- (5) *Rkang-gling*. Metal, ornamented, Chinese pattern with dragon mouth. Pair.
- (6) *Rkang-gling*, fife, made of the human femural bone, with brass mouth piece and white metal mounts, encased in a coil of rope. Usually a piece of supposedly human skin is sewed around it. Used in exorcising ceremonies. Pair.
- (7) *Rkang-gling*, of human bone, without any ornamentations or mountings.

10. P. O. MATTHAI.

An interesting Manuscript written in the Malayalam language.

This Manuscript was found among the collections of the Bishop's College Library, Calcutta. Mahamahopadhyaya Haraprasad Shastri while cataloguing the Manuscripts belonging to the above Library in 1904 has commented on this MS. as follows: "A History of the Malayalam Country, written with a stylus on palm leaf. Contains the story of Paraśurāma obtaining a cession of land beyond the Western Ghats."

The Manuscript contains 129 leaves, both sides written by stylus in beautiful round malayalam character. Each leaf measures 6 inches by 1½ inches, containing 6 to 7 lines on each page.

The Manuscript begins with a praise to the Hindu Trinity, Hari, Sri, and Ganesh, and deals with the arrival of Paraśurāma on the other side of the Western Ghats, known as Kerala, and allotting tracts to different castes. It contains also references to the Tulus, Chera and Pāṇḍya kings of South India, and the history of the origins of a number of castes and names of villages or "*gramas*" in the Kerala country. It was probably written by a Brahmin, in the pure Malayalam language, unmixed with either Tamil or Canarese, would make it probable that it was written by some one living in Central Travancore, near Quilon.

There is nothing in it to show the date of its writing. There are, however, two references to "Rasi," a gold coin of South India, value being about six annas, which was the acknowledged currency in Travancore about 300 years ago, and there are certain minor references also pointing to its early origin.

There is a clue as to how it came among the collections of the Bishop's College Library. Bishop Middleton, the first Bishop of Calcutta and a great missionary scholar, one time vice-President of the Asiatic Society of Bengal, and the founder of the Bishop's College, (which was then located at Howrah), visited South India in 1814; it is quite probable that he had crossed the Western Ghats to visit the ancient St. Thomas Christian Community in Malabar, or

a deputation from among these Christians might have waited upon him at Trichinopoly. A Brahmin convert may have presented this Manuscript to him, and he may then have brought it to Howrah and added it to the existing collection of the Bishop's College.

11. MESROVB JACOB SETH.

A Miscellaneous collection of antiquities, coins, documents and pictures relating to Armenia and India.

- (1) A pastoral letter, called "Kondak" in Armenian, sent by His Holiness George V, the Catholicos or the Supreme Patriarch of all the Armenians at Etchmiadzin in Armenia, to Mesrovb J. Seth, M.R.A.S., of Calcutta, on the occasion of his Literary Jubilee on the 4th November, 1928. There are at the top the portraits of the Apostles Thaddeus and Bartholmew who preached in Armenia, and of St. Gregory, the Illuminator, who converted Armenia to the Christian faith in the year 301 A.D. On the right hand side of the Illuminator is the picture of the Monastery of Etchmiadzin—the Vatican of Armenia—where the Catholicos resides. The Venerable Mount Ararat of Biblical fame is shown on the left and the Mitre and the sacred Vestments worn by the Armenian Pontiff are shown below with the Seal of the Catholicos. A specimen of modern Armenian art.
- (2) A Map of ancient Armenia engraved at Venice in 1751.
- (3) A Map of modern Armenia printed at Paris in 1927.
- (4) One carved old ivory "Kalamdan" (pen-box) with the portraits of Moghul Emperors and their queens, carved on the same.
- (5) One carved old ivory box for small scent bottles.
- (6) Four old daggers inlaid with gold, one with a jade handle.
- (7) One copper picture of Sultan Mohammad Mirza of the House of Timur.
- (8) A portrait of Shah Jehan painted on ivory.
- (9) A portrait of Shah Jehan, with vazirs, painted on ivory.
- (10) A picture of Krishna with his wife, Radha, Indian painting.
- (11) A picture of Maharajah Kansh's Darbar, Indian painting.
- (12) 33 loose Indian paintings.
- (13) An old Arabic Manuscript book, Qasideh Bardah, brought to India as a present in the year 1028 A.H.
- (14) An illustrated Manuscript copy of Khams Nizami with 13 hand-painted illustrations.
- (15) 5 silver Tetradrachmas of Seleucus.
- (16) 10 silver coins of Nadir Shah of Persia.
- (17) 15 Parthian drachms.

12. R. B. S. SEWELL AND B. S. GUHA.

Two skulls from Harappa, showing the two main racial types disclosed in the human remains discovered so far in the different sites in the Indus Valley, belonging to the Chalcolithic Period.

13. A. SOMMERFELD.

Chinese bronze head of Kuan-Yin.

Kuan-Yin, the Chinese Goddess of Mercy, is a transformation of the male Buddhist Bodhisattva Avalokiteshvara. It has been held

that the transformation was made in China probably in the twelfth century. Male Kuan-Yins are sometimes seen in China.

The history of the fine life-size head exhibited is not known. Its date must be early, perhaps before the twelfth century.

14. THE ZOOLOGICAL SURVEY OF INDIA.

(1) *Two Allied Carps.*

Callocarpio and *Catla* are closely allied monotypic genera. The former differs from the latter in the possession of a short dorsal fin and in the disposition of the pharyngeal teeth in a single series. *Callocarpio* does not grow to more than a foot in length and is endemic in Siam while *Catla*, according to Day, attains at least 6 feet in length and its range extends from India through Burma to Siam. According to Dr. H. Smith, Adviser to the Siam Government on Fish and Fisheries, no young *Catla* has so far been found in Siam though the adult fish is fairly common. In India *Catla* breeds in paddy fields etc., during the rainy season.

(2) *A goat employed as "Scapegoat" in the Bilaspore District, Central Provinces.*

The goat was found on the 12th of February, 1927, tied with a string to a small date-palm at cross roads along the unmetalled Pindra-Dindori-Mandla Road. It was ornamented as a goddess with a number of articles. The goat had been expelled from a neighbouring village after an elaborate ceremony as a scapegoat to carry with it the demon of small pox. This specimen has been described by Dr. S. L. Hora in the *Journal* of the A.S.B., Vol. XXII, 1926, p. 137.

(3) *Fishing Implement from the Khasi Hills, Assam.*

The peculiar fishing implement consists of a long bamboo rod and a small conical bag-net. The broad open end of the net is attached to a circular cane ring. At one end the bamboo rod is split lengthwise into three portions and at a distance of about two feet from this end just below a node there is a cane string strongly tied round the rod to prevent the splitting of the bamboo any further. The three portions of the rod are fixed to the cane ring of the net. A thin wire is stretched across the mouth of the net and is attached to the ring on either side. A series of earthworms is threaded on to the wire as bait. The net is lowered in a pool and, when a fish is seen nibbling the worms, it is lifted vertically upwards. This implement is used for catching small fish living in pools among boulders in the course of torrential streams.

15. SATYA CHURN LAW.

Two uncommon specimens of bird migrants shot near Calcutta.

(1) *Clamator coromandus* (Linn.) ♂ The Red-winged Crested Cuckoo.

Obtained from a Bamboo jungle, in September, 1929, near about Agarpara, on the E. B. Ry., 10 miles from Calcutta in the District of 24-Parganas. Though not a very good specimen for exhibit (the tail feathers being damaged), it has some importance as being an extremely rare bird, the occurrence and distribution of which in Lower Bengal

so near Calcutta having been overlooked by Mr. Stuart Baker in the 2nd Edition of Fauna of British India : Birds.

(2) *Pericrocotus roseus roseus* (Vieil.) ♂ The Rosy Minivet.

Obtained on November 23rd, 1929, from east of Titagarh (E. B. Ry.) in the District of 24-Parganas, about 14 miles from Calcutta. Found with a party of 8 to 10 birds among tall mango trees. Distribution of this species in India is not yet known with any degree of accuracy.

that the transformation was made in China probably in the twelfth century. Male Kuan-Yins are sometimes seen in China.

The history of the fine life-size head exhibited is not known. Its date must be early, perhaps before the twelfth century.

14. THE ZOOLOGICAL SURVEY OF INDIA.

(1) *Two Allied Carps.*

Callocarpio and *Catla* are closely allied monotypic genera. The former differs from the latter in the possession of a short dorsal fin and in the disposition of the pharyngeal teeth in a single series. *Callocarpio* does not grow to more than a foot in length and is endemic in Siam while *Catla*, according to Day, attains at least 6 feet in length and its range extends from India through Burma to Siam. According to Dr. H. Smith, Adviser to the Siam Government on Fish and Fisheries, no young *Catla* has so far been found in Siam though the adult fish is fairly common. In India *Catla* breeds in paddy fields etc., during the rainy season.

(2) *A goat employed as "Scapegoat" in the Bilaspore District, Central Provinces.*

The goat was found on the 12th of February, 1927, tied with a string to a small date-palm at cross roads along the unmetalled Pindra-Dindori-Mandla Road. It was ornamented as a goddess with a number of articles. The goat had been expelled from a neighbouring village after an elaborate ceremony as a scapegoat to carry with it the demon of small pox. This specimen has been described by Dr. S. L. Hora in the *Journal* of the A.S.B., Vol. XXII, 1926, p. 137.

(3) *Fishing Implement from the Khasi Hills, Assam.*

The peculiar fishing implement consists of a long bamboo rod and a small conical bag-net. The broad open end of the net is attached to a circular cane ring. At one end the bamboo rod is split lengthwise into three portions and at a distance of about two feet from this end just below a node there is a cane string strongly tied round the rod to prevent the splitting of the bamboo any further. The three portions of the rod are fixed to the cane ring of the net. A thin wire is stretched across the mouth of the net and is attached to the ring on either side. A series of earthworms is threaded on to the wire as bait. The net is lowered in a pool and, when a fish is seen nibbling the worms, it is lifted vertically upwards. This implement is used for catching small fish living in pools among boulders in the course of torrential streams.

15. SATYA CHURN LAW.

Two uncommon specimens of bird migrants shot near Calcutta.

(1) *Clamator coromandus* (Linn.) ♂ The Red-winged Crested Cuckoo.

Obtained from a Bamboo jungle, in September, 1929, near about Agarpara, on the E. B. Ry., 10 miles from Calcutta in the District of 24-Parganas. Though not a very good specimen for exhibit (the tail feathers being damaged), it has some importance as being an extremely rare bird, the occurrence and distribution of which in Lower Bengal

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ANNUAL REPORT FOR 1929.

The Council of the Asiatic Society of Bengal has the honour to submit the following report on the state of the Society's affairs during the year ending the 31st December, 1929.

Ordinary Members.

Totals. The calculated total of Ordinary Members on the roll of the Society at the close of 1929 was 618 as against 622 at the close of 1928, a net decrease of 4 during the year. This is the first decrease in membership to be booked after an uninterrupted and rapid growth for the past five years. The regression, however, is small and the closing balance remains still above the 600 which was reached last year for the first time in the history of the Society.

Gains and losses. These were as follows during the year:—

<i>Gains.</i>		<i>Losses.</i>	
Old elections carried forward	3	Applications withdrawn	.. 1
New elections	79	Elections lapsed	.. 10
		Elections carried forward	.. 5
		Deaths	.. 10
		Resignations	.. 37
		Rule 38	.. 13
		Rule 40	.. 10
Total	82	Total	86

Initial total 622; net loss 4; final total 618.

General. The annual loss in membership during 1929 was practically the same as for the two previous years, but the new admissions were fewer in number than for the five previous years. It is likely that for some time to come our period of rapid expansion will prove to be over. Now a period of consolidation has to follow, in which newly admitted members whose interest in the Society's affairs is short-lived may gradually be replaced by members whose interest is more permanent, so as to constitute a compact body of membership of high stability.

Amongst the 37 resignations of the year most were those of recent members: of 11 who joined in 1926, of 5 who joined in 1927 and of 4 who joined in 1928.

Rule 38, dealing with members whose subscriptions are in arrears, was again strictly applied during the year and the names of 14 members were consequently removed from the rolls under this head.

A detailed cross-check of the membership lists was, as usual, made at the end of the year, ensuring the reliability of the statistics given.

Non-resident Members. Their total has again improved and stands at 181 against 167 at the end of last year. It is amongst this class of members that there is still room for appreciable expansion.

Life-members. Again several of our older members compounded for life-membership during the year, 6 in all. At the end of the year, the number of life-members was 49, against 46 at the end of last year. It is pleasant to see the growth of our body of "elder statesmen" who have linked themselves for life to our old institution, and it is a healthy sign that this body keeps growing. Nothing is more grievous than to lose old members, who for twenty years or more have shared our efforts in weal and woe, merely on account of retirement from India or on account of retirement into private life.

Deaths. The hand of death has been heavy during the year. Amongst the old and especially valued members lost to us, whose memory will be cherished, and for whose departure the Society is the poorer, the following may be mentioned :—

A. L. Bose (Ordinary Member, 1898).

Sir Rameshvar Singh, Maharaja of Darbhanga (Life Member, 1899).

Syed Abdul Latif (Ordinary Member, 1909).

The Hon'ble Nawab Saiyid Nawab Ali Chaudhuri (Ordinary Member, 1914).

The Hon'ble Mr. Byomkes Chakravarti (Ordinary Member, 1927).
Maharajah Sir Manindra Chandra Nandy, of Cossimbazar (Life Member, 1928).

Associate Members.

During 1929 one Associate Member was lost by death :—

MM. Sadasiva Misra (1929).

Of 8, the quinquennial period of membership terminated during the year and, of these, 5 were re-elected for a further period of 5 years.

Two new Associate Members were elected during the year :—

MM. Sadasiva Misra.

Rai Bahadur Sarat Chandra Roy.

The present number stands at 10 ; statutory maximum 15.

Special Honorary Centenary Members.

Our only surviving Special Honorary Member has remained with us.

Institutional Members.

During the year the first two Institutions were admitted to this newly instituted class of membership. They were :—

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Ordinary Fellows.

At the Annual Meeting held on the 4th February, 1929, the following members were elected Ordinary Fellows:—

A. Howard.
J. H. Hutton.
Sir Edward D. MacLagan.

No Ordinary Fellows were lost by death or resignation. At the end of 1929 the number of Ordinary Fellows was 43; statutory maximum 50.

Honorary Fellows.

During the year two distinguished personalities were elected Honorary Fellows:—

Sir R. N. Mookerjee.
Dr. Charles J. H. Nicolle.

Three Honorary Fellows were lost by death:—

Sir Edwin Ray Lankester, 1899.
W. H. Perkin, 1922.
Henry Beveridge, 1925.

At the end of 1929 their number was 27; statutory maximum 30.

Condolences.

The Council expressed its condolences to the relatives of the following distinguished personalities deceased during the year:—

H. Beveridge, I.C.S. (retired), a former President of the Society, and an Honorary Fellow.
Maharajah Sir Manindra Chandra Nandy, of Cossimbazar.

Council.

The Council met 12 times during the year. The attendance averaged 11 of the 20 component members.

The following resolutions of thanks were passed by the Council:—

To Sir Devaprasad Sarvadhikary, Sir B. L. Mitter and Mr. J. H. Lindsay, retiring members, for the valuable services rendered by them to the Society as Council members.

To Dr. U. N. Brahmachari for a further donation to the Sir William Jones Medal Fund.

To Dr. S. C. Law for a gift of Rs. 2,350 for the institution of a Joy Gobind Law Memorial Fund.

To Sir R. N. Mookerjee for a donation to procure the new edition of the *Encyclopædia Britannica* for the Society's library.

To MM. Haraprasad Shastri for the valuable services rendered by him as the Society's representative on the Board of Trustees of the Indian Museum.

To Lt.-Col. R. N. Chopra for the donation to the Society's library of his important work on Anthelmintics.

To Lt.-Col. R. B. S. Sewell, at the occasion of his resignation from the Council, for his valuable services rendered to the Society.

To Pandit Rajani Kanta Sahityacharya, Chittagong, for his presentation to the Society of two specimens of petrified wood from Chittagong, and of four Sanskrit MSS.

To Dr. Baini Prashad and Dr. S. L. Hora for their valuable services rendered in binding, repairing and supplying redrawing of missing plates, of Hardwicke's *Illustrations of Indian Zoology*.

To the General Secretary for his labour and care in drawing up and issuing revised and expanded Catalogues of works published in the *Bibliotheca Indica*.

Office Bearers.

The changes in the Council during the year were as follows:—

Lt.-Col. Sewell, Nat. History Secretary, resigned in March, on account of absence from India, and was replaced by Dr. S. L. Hora.

Dr. Baini Prashad, Treasurer, was absent from 8th to 20th July, from 26th October to 25th November, and from the 28th December till the end of the year, the General Secretary officiating for him as Treasurer.

Sir C. V. Raman was absent from India from July to the latter part of December.

Committees of Council.

The standing Committees of Council during the year were the Finance, Publication and Library Committees, which met monthly.

A special Committee was appointed to advise in the matter of a donation from the Local Committee, Calcutta Session, Indian Science Congress, for the institution of a Indian Science Congress Prize. The Committee reported, and its report was adopted by the Council.

Finance Committee.

The Finance Committee continued during the year to meet separately on dates different from those of the Council Meetings.

A special meeting was held in December, for consideration of the next year's budget.

Office.

General Secretary. The General Secretary attended office during 362 days of the year and continued to perform the amalgamated duties of General Secretary and Assistant Secretary.

Staff. Changes in the office staff took place as follows :—

G. Mathai, in charge of the old files, left in May and was replaced in June by P. J. Ooman, who left at the end of the year.

Attendance and spirit were generally satisfactory but we have not yet been able to man our staff so that it can fully and adequately deal with the many varied and complicated demands made on the office. This is largely a question of pay. The work is generally of a non-mechanical nature, requiring intelligence as well as zeal for its due performance. The finances of the Society, owing to the lack of an adequate endowment fund, do not enable it to spend more money on salaries than it does. Yet a higher standard of pay is necessary to attract men of capacity for independent and constructive work and to offer them sufficient prospects to induce them to stay on. It is also our experience that small salaries make the running of an office expensive in the long run. Quality has a money value beyond that of quantity.

Subordinate Staff. In the subordinate staff the usual minor changes took place, which do not call for comment.

Correspondence. This branch of activity not only continued to be exacting, but during the year definitely surpassed in its demands the response that could be given to it. The number of outgoing letters was 3270; that of the incoming letters 3897, the latter more than 230 above the total of the previous year, and exceeding by several hundreds the number received in any year before that. This proves two things. First, that there is a growing appeal to the Society for information of a most varied nature. Secondly, that the limit of our office capacity is at present an average of about 10 letters daily, as has been the average for the last few years. With one typist, no shorthand writer, and no correspondence clerk, no more can be expected, and with an increasing number of letters received there is so much less time for replying as they take up attention and time in many ways even if not directly replied to. Most of them require some kind of action nevertheless. Correspondence is and remains a most vital activity of the Society and one that is in most urgent need of being strengthened.

Council Circulars. About 160 Council and Committee circulars were issued during 1929.

Files. Not much progress was made with regard to the files, old and new. The remarks under this heading made in recent annual reports still hold good. This branch of the office

work continues to offer considerable difficulties and we have not yet been able to acquire the services of a really competent and satisfactory file clerk. During the year two men in succession gave up the post as a bad job.

Stock-room. Labelling, bundling and registration of the contents of the stock-room was kept up-to-date during the year. The stock books were also kept up for new accessions and sales.

Distribution. No change was made in the mode of distribution of our publications and notices. An appreciable amount of distribution of issues of the *Bibliotheca Indica* was effected during the year.

Addresses. The printed addresses remained in use and were revised during the year. A system was devised to convert all revised addresses into printed form without delay, month by month.

Card Register. The card registers of the Society's membership and of the Indian Science Congress were kept up-to-date and checked at the close of the year.

Stationery. The administration regarding this is now in satisfactory order and the subject does not call for remarks.

Circulars and forms. The number of these printed during the year remained the same as of the year before, namely 46.

Office furniture. During the year a new and more suitable blackboard was purchased, as well as an additional block cabinet, and a stand for a monolith presented to the Society by Mr. J. P. Mills.

Office Manual. This still remains a desideratum.

Arrangement. During the year better dispositions were made as to the seating of the staff. The library staff and clerical staff were separated and the current files arranged near at hand in the office room. This change has proved practical and has materially facilitated both office and library work.

General. With the energetic vitality of the Society and its flourishing state an inherent difficulty becomes more and more clearly manifest. A learned Society is a non-earning institution. In contradistinction to a business concern, the more work it performs the more money it loses. A Society like the Asiatic Society of Bengal can never exist on its subscriptions alone otherwise than in a condition of feeble life and restricted activity. All the Society's publications, as the majority of works of scholarship, are produced at a loss. The Society is one of the few learned institutions which has not increased its subscription rates since the great war. It is necessary to find friends of learning and patriots to come forward with endowments of which the income will go far to meet the recurrent burden of an efficient, well-staffed office. Apart from zeal, inspiration and devotion of the members and officers of the Society, its office is a matter of hard cash, and it is certainly most desirable that there

should be some endowment fund from the income of which the salaries of a qualified Assistant Secretary, a capable stenographer, an efficient correspondence clerk, and a competent archivist and file clerk, and of others, could be met, independent from the fluctuating current income of any year. In the meantime we have to be content to apply the proverb that *quand on n'a pas ce qu'on aime, il faut aimer ce qu'on a*, and continue undauntedly to utilise the available resources to the best advantage and with resolute determination.

Rules and Regulations.

During the year no changes were made in the Rules of the Society. Some minor changes were introduced in the Regulations regarding the various awards of medals, the Library, the Lending of Manuscripts, the Submission of Papers for publication, and the Consideration of the Annual Statement of Accounts.

A new edition of the Rules and Regulations was brought out towards the end of the year, and as for many years no revised edition had been distributed to old Members, a copy was forwarded to all members on the roll of the Society.

Indian Science Congress.

The sixteenth annual meeting of the Indian Science Congress was held in Madras, from January 2nd to January 7th, 1929, under the patronage of His Excellency the Right Honourable the Viscount Goschen of Hawkshurst, Governor of Madras. Sir C. V. Raman was President. The *Proceedings* of the Congress were published in October, earlier in the year than had been possible for some years. The publication contained 500 pages, 60 more than the year before. During the latter months of the year the usual administrative work for the Congress in connection with the next Session (Seventeenth Congress), to be held in Allahabad, was performed by the Society's Office. The flourishing condition of the Congress entailed considerable labour and as usual the rush at the end of the year was exceedingly great; this year again reaching almost to breaking point.

As in previous years the abstracts were sent, as far as practicable by post to all members who had applied for membership before the date of publication. This year this date was again late, the 18th December, leaving once more a barely sufficient margin of time to reach distant members before their departure for Allahabad. Lateness of enrolment is on the increase, and of late years the number of members locally enrolled during the actual session of the Congress has been steadily growing. This matter is presenting a serious problem which needs the careful attention of the Congress authorities.

The Congress finances remained separated from those of the Society. The Society contributed a grant of Rs. 250 towards the Congress funds in aid of the publication of their *Proceedings*.

The General Secretaries to the Congress continued to be as in the year before, Prof. S. P. Agharkar and Dr. R. V. Norris. The latter resigned during the latter part of the year on account of his permanent departure from India and has not yet been replaced.

The general administration of the Congress, when not in session, continued, as hitherto, to be attended to by the office of the Society.

The Council issued a reprint of the *Proceedings* of the Second Congress and distributed copies of this reprint as a souvenir to the members of the third Madras Congress, 16th Session. The Council also decided to reprint the Proceedings of the Fourth Congress, Bangalore, which has been out of print for a long time.

The great expansion of the Congress has produced certain administrative problems and difficulties in urgent need of solution. These matters are now being considered by the Congress authorities.

Indian Museum.

The Society's representative on the Board of Trustees of the Indian Museum, under the Indian Museum Act, X, of 1910, remained, towards the end of November, the same, MM. Haraprasad Shastri, who for reasons of health resigned his function in November. The Council nominated in his place Rai Upendra Nath Brahmachari Bahadur.

The Council recorded a vote of thanks to the Shastri for his valuable services rendered as its representative on the Board of Trustees.

Kamala Lectureship.

The Council's nominee to serve on the Selection Committee of the Kamala Lectureship, administered by the Calcutta University, remained the same, MM. Haraprasad Shastri.

Deputations.

During the year a number of invitations to the Society to send representatives to attend ceremonial functions of learned Institutions all over the world were, as usual, received.

It was not found possible to accept any of them. Such ceremonial demands on the Society present many difficulties. The justification of all ceremonial is its perfection, and perfection is dependent on preparation, which presupposes leisure.

The Society greatly appreciates the testimony of international solidarity implied by such invitations. It cordially

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reciprocates the feelings which prompt them. However, life in the tropics, and moreover in a land of huge internal distances as well as remoteness from most other parts of the world renders personal representation difficult of realisation at all times. Even a well-turned, apposite return-message in writing demands consideration and careful thought. It is our earnest desire that we may find the necessary time, overburdened as it is by the unceasing routine work of the day, to cultivate duly our responses to all the scholarly greetings that reach us during the course of the year and thereby to strengthen the bonds of the community of learning which it is so important to establish and to maintain.

Congratulations.

The Society sent its cordial congratulations to the following of its members :—

To Sir Benode C. Mitter, at the occasion of his nomination to membership of the Judicial Committee of the Privy Council

To Prof. C. V. Raman, at the occasion of his receiving the distinction of Knighthood.

To Lt.-Col. R. B. S. Sewell, at the occasion of his receiving the Doctor's degree in Science from the University of Cambridge.

To Dr. Kedarnath Das, at the occasion of the publication of his important work "The Obstetric Forceps, its history and evolution".

To Lt.-Col. R. N. Chopra at the occasion of the publication of his important work on Anthelmintics.

Visits.

An appreciable number of distinguished personalities visited the Society during the year. Amongst them were residents of India, Ceylon, Burma, Java, Borneo, China, Australia, England, Sweden, Germany, Hungary, Belgium, Holland, France and the United States of America, and as to profession : Missionaries, Government Officials and Administrators, Judges, Religious Leaders, Politicians, Journalists, Authors, Medical Men and Scholars in the various branches of science.

Special mention may be made of the visits, in December of the Public School Boys Empire Tour group with their leaders, of the Deputy Speaker of the House of Commons, of the President of the Ceylon Branch of the Royal Asiatic Society, of the Administrateur de Chandernagore, and of the Officiating Director of the Archæological Department of India.

Social Functions.

The only social function held by the Society during the year was an informal reception by the Council given to Sir

Malcolm Watson, recipient of the Sir William Jones Memorial Medal, held on the 20th February.

Elliott Prize for Scientific Research.

The prize offered for the year was for research in Chemistry. No papers were submitted in competition for the prize. The prize for next year (1930) will be for research in Physics.

Barclay Memorial Medal.

The next (biennial) award of the Barclay Memorial Medal, for 1929, will be announced in the Annual Meeting in February, 1930.

Sir William Jones Memorial Medal.

The next (biennial) award, for Asiatic Researches in Science, will be made in 1931.

Annandale Memorial Medal.

The next (triennial) award, for important contributions to the study of Anthropology in Asia, will be made in 1931.

Joy Gobind Law Memorial Medal.

During the year Dr. Satya Churn Law made over to the Asiatic Society of Bengal, in memory of Joy Gobind Law, C.I.E., a donation of Rs. 2,350 for the creation of an endowment for the triennial award of a medal for conspicuously important work on Zoology in Asia.

The Council framed and adopted a set of Regulations regarding the award, which will be made for the first time in the annual meeting of the Society in February, 1930.

Paul Brühl Memorial Medal.

During the year the "Brühl Farewell Committee" donated a sum of Rs. 930 for the institution and endowment of a Brühl Memorial Medal, for meritorious researches in Indian Botany, in commemoration of the life-work of Prof. Paul J. Brühl, on the occasion of his retirement as a teacher in Botany in India, chiefly in Calcutta, for a period of nearly half a century.

It was decided to accept the donation. The award is to be triennial. Regulations for the award are to be framed and it is the intention to announce the first award in 1932.

Calcutta Indian Science Congress Prize.

In 1928 the Local Committee of the Indian Science Congress, Calcutta Session, 1928, made over a sum of Rs. 2,213 and

odd to the Asiatic Society of Bengal for the institution and endowment of a "Calcutta Prize" in connection with the Indian Science Congress. In 1929 the donation was accepted and it was decided that the fund be allowed to accumulate by investment, and that in the year of any session of the Congress in Calcutta the interest accruing that year shall be utilised for the award of a "Calcutta Prize". The prize will be awarded for such meritorious work published by a member of the Indian Science Congress as may be determined by the Council of the Asiatic Society of Bengal at the occasion of each session of the Indian Science Congress in Calcutta.

Regulations regarding the award are to be framed by the Council prior to the next session of the Congress to be held in Calcutta.

Society's Premises and Property.

No remarks are called for under this heading with regard to 1929, except that again no opportunity was found to undertake annual repairs under the heading upkeep, for which an amount of Rs. 2,000 had been made available in the year's budget.

In order to prevent a further putting off of the required work it was decided to credit in future the annual budget grant under this head to a separate fund from which the costs are to be met, which will allow the regular execution of the triennial repairs without dislocation of the budget.

Certain repairs to and improvements in the installation for water-supply to the retiring room were effected during the year.

The leasing out of a portion of the Society's grounds during the year necessitated a remodelling of the entrance drive.

Two portions of the Society's grounds of no real use to the Society were leased out on advantageous terms during the year: the one for the erection of a shop, the other for the installation of a petrol service station.

The various desiderata and problems existing under the heading Premises and Property have been mentioned in the annual reports of the last few years and have to be kept in mind permanently until realisation.

Accommodation.

The old problems to be carried over as still needing attention remain: the provision of a set of small work-rooms for various uses, foremost of all for the archives and the editorial work of the Society, extension of the steel shelving in the library and better shelving in the stock-rooms.

Artistic and Historical Possessions.

Mr. J. P. Mills donated to the Society an interesting monolith found in Northern Cachar, incised with primitive figures. A paper on the find of which this specimen forms part is in the press and will be published in the *Journal*.

No further paintings were cleaned and photographed during the year. A set of photographs of our statuary has still to be prepared.

Presentations, Donations and Legacies.

In addition to the items mentioned under the previous heading or to be mentioned under the heading Library, the following donations were made to the Society during the year.

Dr. U. N. Brahmachari made a further donation of Rs. 186/5 to the Sir William Jones Memorial Medal Fund to make it entirely self-supporting.

Dr. S. C. Law donated a sum of Rs. 2,350 for the institution of a Joy Gobind Law Memorial Medal Fund.

Sir R. N. Mookerjee made a donation of Rs. 400 to enable the Society to purchase the new, 14th, edition of the *Encyclopaedia Britannica*.

Library.

Permanent Library Endowment Fund. This fund received during the year some further substantial donations as already preliminarily mentioned in last year's report. Mr. W. K. Dods donated Rs. 1,000, Sir David Ezra Rs. 500, and Mr. Gour Churn Law Rs. 500. New investments were made in $3\frac{1}{2}\%$ Government paper to a face value of Rs. 3,000. The total invested capital (face value) is now Rs. 11,000.

It is the intention to let the investment grow to at least Rs. 20,000 market value, before part of the annual income will be utilised for annual expenditure.

Accessions. The accessions to the Library during the year, exclusive of about 200 periodicals received in exchange or otherwise, numbered 393 volumes, out of which 168 were purchased and 225 were acquired by presentation. In addition, a valuable set of about 150 German academical dissertations was presented.

The more important items of presentations and purchases are given below in two lists.

The original grant for book purchases for the year was Rs. 2,000 but actually an amount of Rs. 2,650 was spent. For the new year the grant has been increased by Rs. 500 and fixed at Rs. 2,500.

Presentations of Interest.

- (1) Linguistic Survey of India, Vol. 1, Pt. 2. Calcutta, 1928 (Govt. of India).
- (2) N. G. Majumdar : Inscriptions of Bengal, Vol. 3. Rajshahi, 1929. (Varendra Research Society.)
- (3) Malcolm Watson : Prevention of Malaria. 2nd ed. London, 1921. (Author.)
- (4) Transactions of the Far Eastern Association of Tropical Medicine. Seventh Congress. 2 Vols. 1927-29. (Pasteur Inst., India, Kasauli.)
- (5) R. Gopalan : History of the Pallavas of Kanchi. Madras, 1928.
- (6) John D'Oyly : Sketch of the constitution of the Kandyan Kingdom. Colombo, 1929. (Ceylon Administration.)
- (7) Annual Bibliography of Indian Archaeology, 1927. London, 1929. (Kern Institute.)
- (8) Kedarnath Das : Obstetric Forceps. Calcutta, 1929. (Author.)
- (9) L. F. de Beaufort : Science in the Netherlands East Indies. (Roy. Acad. Sci., Amsterdam.)
- (10) B. Schrieke : Effect of Western Influence in the Malay Archipelago. Batavia, 1929. (Batavian Soc. Arts and Sci.)
- (11) Catalogue of Madreporarian Corals in the British Museum. Vol. 7. London, 1928. (British Museum.)
- (12) Catalogue of the Coins in the Indian Museum. Vol. 4. Oxford, 1928. (Govt. of India.)
- (13) H. V. Nanjundayya and L. K. Ananthakrishna Iyer : Mysore Tribes and Castes. Mysore, 1928. (Govt. Ori. Libr., Mysore.)
- (14) E. Senart : Les castes dans l'Inde. Paris, 1927. (Paul Geuthner.)
- (15) P. O. Bodding : Santali Dictionary, Vol. 1, pt. 1. Oslo, 1929.
- (16) H. G. Rawlinson : Source Book of Maratha History. Vol. 1. Bombay, 1929. (Govt. of Bombay.)
- (17) V. R. Ramachandra Dikshitar : Hindu Administrative Institutions, Madras, 1929. (University of Madras.)
- (18) H. Cousens : Antiquities of Sind. Calcutta, 1929. (Govt. of India.)
- (19) Fritz Sarasin : Ethnologie der Neu-Caledonier und Loyalty-Insulaner. 2 Vols. München, 1929. (Author.)
- (20) Albert and Gabrielle L. C. Howard : Application of Science to Crop-production. London, etc., 1929. (Authors.)

Purchases of Interest.

- (1) Hargovind Das T. Sheth : Pāṇi-sadda-mahannavo. Calcutta, 1928.
- (2) W. Durant : Story of Philosophy. London, 1928.
- (3) A.V.LeCoq : Buried Treasures of Chinese Turkestan. London, 1928.
- (4) E. H. Johnston : Saundarananda of Asvaghosa. London, 1928.
- (5) J. B. Pratt : Pilgrimage of Buddhism. London, 1928.
- (6) E. Rutter : Holy Cities of Arabia. 2 Vols. London, New York, 1928.
- (7) A. Stein : Innermost Asia. 3 Vols. Oxford, 1928.
- (8) Ananda K. Coomaraswamy : Origin of the Buddha Image. New York, 1927.
- (9) Marco Polo : Il Milione. Firenze, 1928.
- (10) Cambridge History of India. Vol. 5 : British India. Cambridge, 1929.
- (11) Handwörterbuch des deutschen Aberglaubens. Herausgegeben von Hans Bächtold-Stäubli. Bd. 1. Berlin, Leipzig, 1927.

- (12) Natural History of Central Asia. Vol. 2: Geology of Mongolia. By Charles P. Berkey and Frederick K. Morris, New York, 1927.
- (13) Interim Report of the Indian Statutory Commission, Sept. 1929.
- (14) Report of the Age of Consent Committee, 1928-29. Evidence, Vols. 1-9. Calcutta, 1929.

Accession Lists. Three quarterly lists of additions to the Library were published during the year and distributed to the members.

Preservation. The practice of inserting tobacco leaves in all books to keep away borer insects and white ants was given up. The tobacco leaves were found to stain the pages. We have now reverted to the use of *nim* leaves for the purpose in accordance with the immemorial practice of this country. Insecticide powder and antiseptic solution continued to be used, the first powdered between the backs of the books and their bindings, the second for washing the shelves.

Binding. During the year 1,322 units, including books, pamphlets and periodicals, were bound at a cost of Rs. 1,738 out of a total budget allowance of Rs. 2,000 sanctioned for the purpose.

The vigorous binding policy of the last six years is now bearing fruit, and during this period over 9,500 units were bound, which practically has wiped out the arrears in binding. From now on binding may resume normal proportions, and be limited to incoming new material and attention to ordinary wear and tear. Consequently the budget grant for the new year under this head has been reduced by Rs. 500 and fixed at Rs. 1,500, thus enabling the book buying grant for the year to be increased by an equivalent amount.

Arrangement. An important minor activity during the year was the re-numbering and re-labelling of all quarto volumes in the Western Section of printed books and their segregation together in one place.

Catalogue. Work on the new Author-Catalogue of printed books in European languages was continued steadily and as rapidly as the available means permitted. A thorough revision of all titles has proved necessary, and the accessions since 1910, the date of the previous catalogue, have to be inserted. By the end of the year 128 pages (quarto, small type, double columns) had been printed off, practically completing the letter D. Copy for the letter J inclusive is ready for composition. The catalogue is estimated to cover about 500 printed pages containing about 15,000 entries.

Shelving. Installation of special steel shelving for the MSS. in the Western Section remains to be effected, and provision also has to be made for further steel shelving, especially for the current accessions of periodical literature.

Finance. During the year a close investigation was made of the financial aspect of the maintenance of the Society's library. It was found that during the six years' period of 1923-28 the annual expenditure under the heads of Purchases, Binding, Insurance, Miscellaneous, Accession-lists and Salaries worked out at an average of about Rs. 7,200 annually, to which has to be added an average of about Rs. 2,400 for shelving. Furthermore, there is the cataloguing to be taken into account which may be estimated at about Rs. 2,000 annually. This expenditure is too heavy for the present income of the Society. It works out at an average of costs of nearly Rs. 20 per member, at the high number of members which the Society has at present on its roll, against their total average subscriptions of about Rs. 26 per head.

The Council, therefore, applied to the Government of Bengal for a grant in aid for the library. Unhappily, the Government, after close and sympathetic scrutiny, found themselves unable to give the grant asked for.

It becomes, therefore, more and more urgent to build up an adequate endowment fund for the Library, and in the meantime it will be necessary to watch most carefully expenditure in this department of the Society's work, as it is evident that it has imperceptibly expanded to an extent disproportionate to the general expenditure and income of the Society.

Finance.

Appendix III contains the usual statements showing our accounts for 1929. No change has been made in the form of their presentation.

New statements are the following:—

Statement No. 18, Dr. Brühl Memorial Fund Account.

Statement No. 19, Joy Gobind Law Memorial Fund account.

Statements still carried over without change from the previous year, pending final ascertainment of commitment and status before liquidation, are:—

Statement No. 9, Catalogue of Scientific Serial Publications, cutta.

Statement No. 10, International Catalogue of Scientific literature.

The other statements are presented as in the previous year and do not call for special comment.

The fund accounts again show their invested assets at their market values at the end of the year, and the investment account, Statement No. 25, shows the allocations of invested money to each fund specifically, whilst as usual both market and book values of the investments are given in it.

Statement No. 27, shows the Balance Sheet of the Society and of the different funds administered by and through it.

The funds belonging to or administered by the Society may be classified as follows:—

1. General Fund.
 - (a) Permanent Reserve.
 - (b) Working Balance.
2. Specific funds belonging to the Society.
3. Funds administered by the Society.

At the end of the year, the position of these funds, as compared with their position at the end of 1928, was as follows:—

	Face value. 31st Dec., 1928.	Market value. 31st Dec., 1928.	Face value. 31st Dec., 1929.	Market value. 31st Dec., 1929.
	Rs.	Rs.	Rs.	Rs.
1. General Fund ..	2,43,794	1,85,413	2,52,000	1,81,150
(a) Permanent Reserve	2,01,600	1,46,108	2,06,200	1,40,170
(b) Working Balance ..	42,194	39,305	45,800	40,980
2. Specific Funds belonging to the Society ..	53,480	44,805	56,730	47,370
3. Funds administered by the Society ..	30,882	28,967	27,230	22,880
TOTAL ..	3,28,156	2,59,185	3,35,960	2,51,400

The amount standing to the credit of the Permanent Reserve Fund at the end of the year is Rs. 2,06,200, face value, invested in 3½% Government paper.

During the year Rs. 2,064 were received through admission fees, and six members compounded for their subscriptions, to a total amount of Rs. 930. The Society also received Rs. 100 as registration fees from the first two Institutional Members, admitted during the year. The grand total, Rs. 3,094, was as usual transferred to the Permanent Reserve. This was effected by a conversion at the market rates, according to a Council decision of 1925, of investments belonging to the temporary reserve of the working balance (Government Paper 3½% to a face value of Rs. 4,600).

A cash balance of Rs. 4 is being carried over to the ensuing year, for adjustment under this head.

The Society received the following grants from the Government of Bengal as follows:—

For	Rs.	Statement.
Journals ..	2,000	1.
O.P. Fund No. 1 ..	8,250	2.
Sanskrit MSS. Fund ..	3,600	4.
Do. ..	6,400	4.
TOTAL ..	20,250	

The Government of India's annual grant of Rs. 5,000 for the Arabic and Persian Manuscripts and Cataloguing Fund expired by the 31st March, 1929, and an application for renewal of the grant for a further period of 5 years has been made during the year.

The income derived from advertising during the year amounted to Rs. 4,976.

The temporary investments of funds in Fixed Deposit and Savings Bank are shown in Statements Nos. 23 and 24. An amount set aside for earmarked expenditure is shown in Statement No. 11.

Statement No. 22 gives an account of the amounts due to and by the Society for members' subscription, sales of publications and contingent charges.

Statement No. 16 gives an account of the Permanent Library Endowment Fund. Investment to the face value of Rs. 3,000 has been added to the *corpus* of this fund from donations received during the year.

The Government securities shown in Statement No. 25 are held in safe custody by the Imperial Bank, Park Street Branch. There was again a further depreciation at the end of the year of the Government securities held, amounting to a total of Rs. 13,841. The depreciation on the face value increased to Rs. 86,095 as against Rs. 69,054 at the end of 1928, affecting the balance sheet adversely to that extent.

The Budget estimates for 1929 and the actuals for the year were as follows :—

Estimates :		Receipts.	Expenditure.
		Rs.	Rs.
Ordinary ..	..	50,000	51,300
Extraordinary ..	..	6,215	6,215
	TOTAL ..	56,215	57,515
Actuals :			
Ordinary ..	..	57,284	55,112
Extraordinary ..	..	7,077	7,077
	TOTAL ..	64,361	62,189

Of the receipts, a sum of Rs. 3,094 derived from entrance fees and compounding fees is classed as extraordinary and is not available for expenditure, as it has to be transferred to the Permanent Reserve. The total extraordinary income of Rs. 4,015 made available for work in connection with arrears in the publication of the Society's Journal was spent during the year.

The ordinary income was about Rs. 7,280 in excess of the estimate, practically accounted for by income over the estimates on Interest, Rs. 700, Miscellaneous, Rs. 50, Members' Subscriptions, Rs. 1,300, Publications, Rs. 3,320, Assam Government

subsidy for Publications, Rs. 1,930, Donations, Rs. 400 and Rent, Rs. 600.

Budgetted income fell short under Advertisements to the amount of Rs. 1,030.

* On the expenditure side salaries absorbed Rs. 400, Postage Rs. 460, Purchase of Books, Rs. 650, Journal and Proceedings, Rs. 3,400, Printing, Rs. 930 and Legal fees, Rs. 470 more than estimated. Under some other headings trifling savings were effected as well as about Rs. 1,000, on Building Repairs. It has been decided to open a new account to be styled "Building Repairs Fund Account," with effect from the year 1930, and to credit it yearly with any savings effected under this head in order to meet any repair commitments involving heavy expenditure.

The excess of ordinary income over ordinary expenditure during the year was Rs. 2,170.

Apart from the fluctuation in rates of our invested funds, the year's working represented a profit of about Rs. 4,900.

The Budget estimates for probable expenditure have again been framed so as to meet demands under various heads based on vigorous activity in all departments of the Society's work. The receipts have been conservatively estimated.

No capital or extraordinary expenditure has been included in the Budget estimates, except a sum of Rs. 3,750 in aid of publications, from the Publication Fund, to enable the continuation of work to clear off the arrears in publication of the *Journal*. If any further need for extraordinary expenditure arises during the ensuing year, it will form a subject of scrutiny and deliberation by the Finance Committee and Council, and will be introduced as a special supplementary grant.

One most important financial measure was taken during the year, which needs special mention. It has become evident that the Society is in very urgent need of greater ordinary income, and above all of an increase in its Permanent Endowment Fund. The Society was able to take a step in the direction of the fulfilment of both needs by the leasing out of two unused portions of its grounds at advantageous terms. Both rents represent new income of Rs. 18,900, gross, in one case for 10 years fixed and in the other case for 25 years fixed. This additional income is however balanced by the loss of an annual budgetted income of Rs. 6,000 from poster advertising on the hoardings in front of the Society's property, which will now disappear. It was decided to allocate the net additional income of Rs. 12,900 to general expenditure to an amount of Rs. 2,900, and to the strengthening of the Permanent Endowment Fund by the investment in it of Rs. 10,000 annually. If this measure can be kept up for one or two decades, there will be a material improvement in the Society's finances of which the importance cannot be over-rated, and which is sorely needed.

BUDGET ESTIMATES FOR 1930.

Ordinary Receipts.

	1929 Estimate.	1929 Actuals.	1930 Estimate.
	Rs.	Rs.	Rs.
Interest on Investments ..	9,500	10,211	10,000
Advertising ..	6,000	4,976	..
Annual Grant ..	2,000	2,000	2,000
Miscellaneous ..	500	543	500
Members' Subscriptions ..	14,500	15,802	14,500
Publications, Sales, and Subscriptions ..	7,500	10,822	8,000
Proportionate Share from Funds ..	10,000	10,000	10,000
Assam Government Allowance for Publications ..	..	1,930	..
Donations ..	..	400	..
Rent ..	..	600	18,600
TOTAL ..	50,000	57,284	63,600

Ordinary Expenditure.

	Rs.	Rs.	Rs.
Salaries and Allowances ..	26,000	26,413	27,000
Commission ..	500	463	500
Stationery ..	1,000	793	1,000
Fan and Light ..	750	458	750
Telephone ..		235	
Taxes ..	1,750	1,753	3,000
Postage ..	1,750	2,212	2,000
Freight ..	100	17	100
Contingencies ..	1,000	836	1,000
Petty Repairs ..	150	77	150
Insurance ..	500	500	500
Menials' Clothing ..	200	126	200
Office Furniture ..	500	389	500
Artistic Possessions ..	100	..	100
Building Repairs ..	2,000	921	2,000
Provident Fund Share ..	550	506	550
Audit Fee ..	250	250	250
Books, Library ..	2,000	2,651	2,500
Binding, Library ..	2,000	1,739	1,500
Journals and Proceedings and Memoirs ..	8,500	11,916	8,250
Printing Circulars ..	1,200	2,130	1,500
Contribution to I.S.C. ..	500	250	250
Miscellaneous (Legal Fees) ..	..	477	..
Permanent Reserve ..	..	..	10,000
TOTAL ..	51,300	55,112	63,600

Extraordinary Receipts.

	Rs.	Rs.	Rs.
To Permanent Reserve			
by Admission Fees ..	1,600	2,032	1,500
by Compounding Fees ..	600	930	500
by Institutional Membership Registration Fees ..	....	100	....
To Publications ..	4,015	4,015	3,750
TOTAL ..	6,215	7,077	5,750

Extraordinary Expenditure.

	Rs.	Rs.	Rs.
To Permanent Reserve			
by Admission Fees ..	1,600	2,032	1,500
by Compounding Fees ..	600	930	500
by Institutional Membership Registration Fees ..	....	100	....
To Publications ..	4,015	4,015	3,750
TOTAL ..	6,215	7,077	5,750

Publications.

Of the *Journal and Proceedings*, Vol. XXIII (for 1927) two numbers, completing the volume, and of volume XXIV (1928) four numbers, also completing the volume, were published. These aggregated 1076 pages and 25 plates. The title pages and index for volume XXIII were also published.

Of the *Memoirs* one number completing volume VIII, one number of volume IX, and two numbers of volume XI were published. These aggregated 322 pages and 16 plates.

A very large amount of material is in hand, and partly in type, for both series.

The *Proceedings* of the 16th Indian Science Congress (508 pages) were also published.

The *Sanskrit MSS. Catalogue* and *Arabic MSS. Catalogue* and the other publications of the year in the *Bibliotheca Indica* are described elsewhere in the report.

The sales of the publications were most satisfactory. An amount of Rs. 11,227 was realised under this head, an increase of roughly Rs. 1,772 over the amount received in the previous year, and the highest income from this source ever received in a single year. These amounts do not take into account publications sent out on sale or return to the agents and as yet unsold.

The amount spent on publications during the year, exclusive of the *Sanskrit MSS. Catalogue* and *Bibliotheca Indica*, was very heavy, namely Rs. 15,931.

The Baptist Mission Press.

Under the capable superintendence of Mr. P. Knight the Baptist Mission Press continued to act as our chief printers and gave again invaluable assistance in closest co-operation.

The Rev. D. Kyles also assisted in a most valued manner in every way.

Agencies.

Our European and Indian Agents remained the same throughout the year.

Exchange of Publications.

Requests for the exchange of publications were during the year, as usual, received from several Institutions and publishers of learned periodicals. At present the Society has already 190 exchanges on its list. Besides, there are about 110 names on the free distribution list of the *Bibliotheca Indica*. This is about as much as can be managed at present. An extension of the exchange list, however, seems highly desirable, and new requests for exchange or free receipt of our publications continue to come in with unfailing regularity. This is a point which the Council will have to consider with care.

No applications for exchange were considered during the year.

Meetings.

The Ordinary Monthly Meetings of the Society were held regularly every month, with the exception of the recess months of September and October. The time of meeting remained fixed at 5-30 P.M. The recorded attendance averaged 18 members and 3 visitors. The maximum attendances were in May and August, each with 24 members and 4 and 3 visitors, respectively.

No meeting of the Medical Section was held during the year.

Exhibits.

In the Ordinary Monthly Meetings a number of exhibits were shown and commented upon by the exhibitors. The following may be mentioned:—

Suniti Kumar Chatterji: Four brass images from the Island of Bali.

The General Secretary: Recent publications of the Society: A Sanskrit MS. from Kashmir belonging to the Society's collection, written in Persian script; Two specimens of petrified wood found in Chittagong; Two wooden carved images from central India; An ancient incised monolith from North Cachar.

Communications.

Apart from papers submitted both for reading and subsequent publication, a number of communications were made from time to time in the Ordinary Monthly Meetings, not meant for subsequent publication.

Amongst such communications made during the year the following may be mentioned :—

Suniti Kumar Chatterji : A note on the recursives and the glottal stop in New Indo-Aryan.

Johan van Manen : The linguistic aspect of the 116th report, for 1928, of the British and Foreign Bible Society, Calcutta Auxiliary; The Tao Te King in the West, a review of translations and editions, together with text-critical observations.

General Lectures.

One General Lecture was held for a fairly numerous audience of members and invited guests during the year 1929 :—

Dr. Jacques Stern, Landgerichtsrat, of Berlin : "The Indian and European conceptions of Law," January 30th.

Philology.

Sixteen papers which were read in the previous year were published.

The following five papers were both read and published during the year :—

Sir J. C. Coyajee : The Bahram Yasht—Analogues and Origins.

Chintaharan Chakravarti : Sanskrit literature pertaining solely to vernacular and exotic culture.

Chintaharan Chakravarti : Date of the Niti section in the Garuda Purana.

C. W. Gurner : Two notes on Bhavabhuti.

W. Ivanow : A biography of Ruzbihan al-Baqli.

Papers read in the Monthly Meetings, but not yet published, were :—

E. H. L. Schwarz : The Chinese connection with Africa.

Mohini M. Chatterji : Interpolations in the Brahma sutram.

Kunja Govinda Goswami : The satak copper plate grant of king Rama Sinha II, of Jaintia, of 1809 A.D.

R. R. Halder : The Chauhans.

George N. Roerich : Modern Tibetan Phonetics with special reference to the dialect of Central Tibet.

K. Zachariah : Thucydides II. 13. A possible explanation of certain difficulties.

N. L. Bor and C. R. Pawsey : English-Sema Naga Vocabulary.

MM. H. P. Shastri : On the date of compilation of Bhattoji Dikshita's Siddhanta Kaumudi.

Mohini M. Chatterji : Brahmanism and lawful food.

Chintaharan Chakravarti : The cult of Baro Bhaiya of Eastern Bengal (A form of Demon-worship)

Sir J. C. Coyajee—(Azi) Dahak in History and Legend.

Mohini M. Chatterji : Brahmanism and Caste.

- Kalipada Mitra: Side-light on ancient Buddhist social Life.
 J. C. Sinha: Indo-American Trade, past and present.
 Dr. Haralu and J. H. Hutton: Angami-English Vocabulary.
 Sri Ram Sharma: The Beginnings of the Suket Dynasty.
 W. Ivanow: Phonetics of colloquial Persian.
 L. Bogdanov: Stray notes on Kabuli Persian.
 MM. H. P. Shastri: The Rg-veda in the making.
 C. W. Gurner: Development of the Rtusamhara theme in the Ramayana.
 Mohini M. Chatterji: Monasticism and Brahmanism.
 D. C. Chatterji: The Hetutattvopadesa.
 B. B. Datta: Testimony of early Arab writers on the origin of our Numerals.
 K. K. Basu: The House of Tughlaq.
 Bibhutibhusan Datta: On the Hindu Names for the rectilinear geometrical Figures.

Natural History: Biology.

Nine papers, read in the previous year, were published during the year.

The following paper was both read and published during the year:—

- Jnanendra Lal Bhaduri: A case of Hermaphroditism in a common Indian Frog, *Rana Tigrina* Daud, with a note on the classification of Hermaphroditic cases.

Papers read in the monthly meetings, but not yet published were:—

- N. V. Bhattacharya and S. C. Sen: Hardening of Indian cheese (chana) (not to be published).
 B. Bonnell: Geophilid Centipodes from the Bed of the Cooum River (Madras).
 H. C. Das-Gupta: On a new theropod Dinosaur (*Orthogoniosaurus Matliyi*, n. gen et n. sp.) from the Lameta Beds of Jubbulpore.
 T. S. Ramanathan: A wilt of *Zinnia* caused by *Sclerotium Rolfsii*.

Natural History: Physical Sciences.

Two papers, read in the previous year, were published during the year.

The following new papers were read in the monthly meetings, but have not yet been published:—

- V. V. Sohoni: Meteorological Normals of Calcutta.
 V. V. Sohoni: Weather Types associated with Nor'-westers in Bengal.
 U. N. Brahmachari and J. M. Das Gupta: A contribution to the Chemistry of certain new aromatic Antimonials.
 S. R. Kashyap: Some Geographical observations in Western Tibet.

Anthropology.

Seven papers, read in the previous year, were published during the year.

The following paper was both read and published during the year :—

W. Shaw: Notes on the Thadou Kukis, edited and annotated by J. H. Hutton.

The latter bulky and important paper was published on behalf of the Assam Government under an arrangement whereby that Government contributed a substantial amount of the cost of production, against the supply to them of a specified number of separate copies for their own use.

Papers read in the Monthly Meetings, but not yet published were :—

Kalipada Mitra: Originals and Parallels of Santal Folk-Tales.

D. N. Majumdar: Race and Adaptability.

P. Ch. Basu: The Anthropometry of the Bhuiyas of Mayurbhanj.

C. R. Pawsey: Ten Folk-stories in Sema Naga.

Chintaharan Chakravarti: Some meteorological Proverbs of the people of Bengal.

J. P. Mills and J. H. Hutton: Ancient Monoliths of North Cachar.

H. C. Das-Gupta: Bibliography of Pre-Historic Indian Antiquities.

The following paper, not subsequently to be published, was also read in one of the monthly meetings :—

Lily Strickland-Anderson: Aboriginal and animistic influences in Indian music.

Medical Section.

No Meeting of this section was held during the year.

Two important publications during the year by members of the section were the *Obstetric Forceps, its history and evolution*, by Dr. Kedarnath Das, of which the author presented a copy to the Society's library, and *Anthelmintics and their Uses*, by Col. R. N. Chopra and Dr. Asa C. Chandler, of which the authors also presented a copy to the library.

Bibliotheca Indica.

Actually published were five issues, Nos. 1497, 1505, 1506, 1507 and 1508 of an aggregate bulk of 9 fascicle-units of 96 pages demy octavo, and of 320 pages quarto. The detailed list is given in the Appendix to the Report.

Of the above issues four constituted complete works, namely :—

1. Majma'-ul-Bahrain, or the Mingling of the two Oceans, text and English translation.
2. Vaikhānasasmārtasūtram, English translation.
3. A Vocabulary of the Kui Language.
4. Nyāyabindu-Tīkā (Reprint edition).

In the Indian series work was continued on six works as follows :—

1. Ātmatattvaviveka, Sanskrit.
2. Pañca-vimśa-brāhmaṇa, English translation.

3. Śrī Rāmāvatara-līlā, Kashmiri.
4. Kuttanimuta Kāvyaṃ, Sanskrit.
5. Vivādaratnākara, Sanskrit (reprint).
6. Kashmiri Dictionary.

In the Islamic series work was continued on the following five works:—

1. 'Amal-i-Šālih, Persian.
2. Ma'athir-i-Rahīmī, Persian.
3. Tārīkh-i-Mubārak-Shāhi, Persian.
4. Tabaqāt-i-Akbārī, Persian.
5. Tabaqāt-i-Akbārī, English translation.

Two new works were begun during the year:—

1. Mkah hgro ma hgro ba bzang mohi rnam thar (Dowazangmo), Tibetan.
2. Concise Descriptive Catalogue of the Arabic MSS. in the collections of the A.S.B., Vol. I.

Arabic and Persian Manuscripts, Search and Catalogue.

Important progress was again made during the current year. The second Maulvi continued his work on the preparation of title slips for all printed works in the Arabic, Persian and Urdu Sections of the library. He terminated his task by the end of the year, having in all prepared about 800 slips.

Binding and repairing of previously and newly acquired MSS. was continued; 252 volumes were bound and repaired during the year, making a total of over 1475 volumes bound since the end of 1924 when this activity was taken up regularly.

During the year 211 volumes of Persian and Arabic MSS. were entered in the registers as newly acquired by purchase. The bulk of these new accessions represent a collection acquired by Mr. Ivanow the year before in Persia and brought back during the last days of December, 1928. His collection consists of 161 numbers at a total cost of Rs. 1,197. The balance of the new accessions were acquired locally at a total cost of about Rs. 375.

Mr. Ivanow's Descriptive Catalogue of the Arabic MSS. in the Society's collections, dealing with the theological portion, was sent to the press, and by the end of the year 208 pages, describing 427 items, had been printed off, whilst a further number of pages, to 448 inclusive, describing items up to number 908, were in type in various stages of progress. This brings the volume to Section VI, prayers, after which there are still two further sections: Miscellanies and Sufism.

Towards the end of the year certain difficulties arose in connection with the rapid and satisfactory progress of the Catalogue which now form a subject of consideration by the Council.

The problem of sufficient shelving space in the Arabic and Persian room remains.

The staff of the department remained unchanged during the year.

Catalogue of Sanskrit Manuscripts.

MM. Haraprasad Shastri's great undertaking made again appreciable progress during the year.

It was not found possible to issue the Sixth Volume, on Grammar, during the period, due to the elaborate preface which will cover some 200 pages. This preface will also be published separately from the Catalogue. Three quarters of it are now in type or printed off, and there is no reason why the volume should not be issued within a few months.

As soon as Volume VI is out of the way the next Volume VII, on Kāvya, will be given to the press for printing. The MS. for it is now press-ready.

During the year the MSS. of two further volumes were further revised and, after final revision by the Shastri, will be press-ready. They are the volumes dealing with Philosophy and Vernacular works. In the meantime the MS. of the volume dealing with Tantra is being arranged. This volume will describe nearly 1,000 MSS. These three volumes will bring the number of MSS. dealt with to 8388.

The staff of the department remained unchanged during the year.

Numismatics.

Two Numismatic Supplements, No. 40 (for 1926-27) and No. 41 (for 1928), were published during the year.

The latter contained a valuable bibliography of Indian Numismatics, describing 868 items. It has been published also in separate form.

An appreciable amount of material for the next Numismatic Supplement is in hand.

In December, the Numismatic Society held its Annual Meeting at the Society's Rooms. The meeting was well attended and successful. Mr. H. E. Stapleton, Council Member of the Asiatic Society of Bengal, was elected President of the Numismatic Society of India for 1930.

Summary.

The year 1929 was one in which prosperity and activity were maintained unabated. The membership decreased by 4 but the total number of Ordinary Members on the Roll by the end of the year remained well over 600, namely 618. The number of Life Members increased from 46 to 49. The Council was active and its Committees performed valuable

work. The staff worked well, but the office work continues to present demands beyond the possibility of full discharge by such staff as the Society can at present afford. The correspondence of the year remained exacting. The many official and ceremonial obligations of the Society were as much as possible attended to and international intellectual relations were fully maintained. The number of distinguished visitors to the Society's rooms during the year was great and varied. The various awards by the Society for scholarly merit were administered with care, and their governing rules were improved. Some new awards were either instituted or offers for their institution were received and are under consideration. A few historical and artistic objects of value were received as presentations. The Library added about 393 volumes to its collections and more than 1,300 volumes were bound. The Permanent Library Endowment Fund received further gifts and its invested *corpus* rose to Rs. 11,000, face value. The financial position of the Society was generally satisfactory. Investments to a face value of Rs. 4,600 were added to the Permanent Reserve Fund. The year's working produced a small surplus. An important source of income was opened by the leasing out of two unused portions of the Society's grounds at advantageous rates, and of this new income a substantial amount will be devoted to the strengthening of the Permanent Reserve Fund. The chief financial problem before the Society remains the strengthening of this Fund, not by thousands but by lacs of Rupees. The publication of *Journal and Memoirs* during the year progressed satisfactorily; what was not actually issued was prepared for early issue in the new year. The Monthly Meetings continued to be of interest and to be well attended. A number of interesting exhibits were shown during the year. One successful general lecture was given. The number of Philological papers presented during the year amounted to thirty; a large increase over the total of the year before. Five papers on Biology were contributed. Two Meteorological papers were received and also two papers on Physical Science. The new Anthropological papers numbered nine. In all, no less than 48 new papers were received, several of considerable length. The Medical Section held no meetings. The issues in the *Bibliotheca Indica* were numerous and important, aggregating over 1,000 printed pages, completing four works, in altogether 5 issues. Two new works were started in this series, but no publication of new works was sanctioned. A Catalogue of Arabic Manuscripts in the Society's collections was begun. 211 volumes of Persian and Arabic MSS. were added to the Society's collections, and 252 volumes were bound. The year under review has been another successful and important one in the long history of the Society. The output of work in all directions has been great in quantity and valuable in quality.

Members and Officers worked harmoniously together in a spirit of zealous enthusiasm, thanks to which the Society's scholarly and social prestige continued to grow. May it continue to do so for many years to come. Looking back to the past we find inspiration, looking forwards we cannot but be determined to aim high.



[APPENDIX I.]

Membership Statistics.

(As calculated for December 31st, for 30 years.)

YEAR.	ORDINARY.								EXTRA-ORDINARY.				FELLOWS.	
	PAYING.				NON-PAYING.									
	Resident.	Non-Resident.	Foreign.	Total.	Absent.	Life.	Total.	Total Ordinary Members.	Centenary Honorary.	Associate.	Institutional.	Total.	Grand Total Membership.	
1900	116	124	18	253	31	22	53	311	4	12	..	16	327	26
1901	123	133	13	269	37	22	59	328	4	12	..	16	344	26
1902	126	126	14	266	47	21	67	333	4	13	..	17	350	26
1903	127	126	15	268	46	21	67	335	4	13	..	17	352	24
1904	132	130	14	276	46	21	67	343	4	13	..	17	360	30
1905	144	133	12	288	48	20	68	356	4	13	..	17	373	29
1906	173	147	15	335	52	20	72	407	4	12	..	16	423	30
1907	174	175	20	369	31	20	51	420	4	12	..	16	436	28
1908	181	193	17	391	38	19	57	448	4	13	..	17	465	30
1909	183	217	13	413	40	20	60	473	4	14	..	18	491	28
1910	209	217	16	442	43	23	66	508	4	14	..	18	526	27
1911	200	225	19	444	53	22	75	519	3	14	..	17	536	28
1912	203	229	19	451	43	23	66	517	3	13	..	16	533	27
1913	200	211	19	430	46	23	69	499	3	14	..	17	516	27
1914	191	187	19	397	50	26	76	473	3	14	..	17	490	24
1915	171	188	21	380	40	25	65	445	3	15	..	18	463	29
1916	145	159	18	322	60	25	85	407	3	15	..	18	425	26
1917	150	144	15	309	45	24	69	378	2	12	..	14	392	22
1918	153	145	17	315	43	24	67	382	2	10	..	12	394	22
1919	141	128	15	284	64	25	89	373	2	11	..	13	386	18
1920	161	134	15	310	32	26	58	368	2	11	..	13	381	28
1921	160	132	16	308	26	26	51	359	2	12	..	14	373	28
1922	160	141	16	317	26	26	52	369	2	13	..	15	384	30
1923	147	120	13	280	30	27	57	337	2	11	..	13	350	28
1924	209	134	12	355	29	28	57	412	2	12	..	14	426	27
1925	263	137	12	412	23	27	50	462	2	12	..	14	476	26
1926	319	162	20	501	23	28	51	552	2	12	..	14	566	25
1927	328	167	18	513	28	33	61	574	2	13	..	15	589	28
1928	344	167	23	534	42	46	88	622	1	12	..	13	635	28
1929	331	181	21	533	36	49	85	618	1	10	2	13	631	27

[APPENDIX II.]

List of Publications issued by the Asiatic Society of
Bengal during 1929.

(a) Bibliotheca Indica (New Series) :

	Price.
	Rs. A. P.
No. 1497: Majma'-ul-Bahrain, Text and English translation (2 units)	2 8 0
No. 1505: Vaikhānasasmārta Sūtram, English translation (3 units)	3 12 0
No. 1506: A Vocabulary of the Kui Language (2 units) ..	2 8 0
No. 1507: Nyāyabindu-tika, Text (2 units) ..	2 0 0
No. 1508: A Dictionary of the Kāshmiri Language, Fasc. 3 (Special price)	30 0 0

(b) Memoirs :

Vol. VIII, No. 7: A Persian Translation of the Eleventh Century Arabic Alchemical treatise 'Ain aṣ-Ṣan'ah wa 'Aun aṣ-Ṣana'ah	1 11 0
Vol. IX, No. 5: Temperature and Salinity of the Surface-waters of the Bay of Bengal and Andaman Sea ..	5 10 0
Vol. XI, No. 1: Diaries of Two Tours in the Unadministered Area East of the Naga Hills	11 13 0
No. 2: The Language of the Mahā-Naya-Prakāśa	2 4 0

(c) Journal and Proceedings (New Series) :

Vol. XXIII.					
No. 3 .. .. .	..	..	..	..	10 8 0
No. 4 .. .. .	..	..	..	..	1 8 0
Vol. XXIV.					
No. 1 .. .. .	..	..	..	..	7 14 0
No. 2 .. .. .	..	..	..	..	4 2 0
No. 3 .. .. .	..	..	..	..	2 10 0
No. 4 .. .. .	..	..	..	..	9 12 0

Title page and Index for Vol. XXIII. (Free to Members and Subscribers.)

(d) Miscellaneous :

Proceedings, Sixteenth Indian Science Congress ..	12 0 0
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PRICE LISTS FOR FREE DISTRIBUTION.

Catalogue of works published in the *Bibliotheca Indica* relating to Indian Culture.

Catalogue of works published in the *Bibliotheca Indica* relating to Islamic Culture.

[APPENDIX III]

Abstract Statement
of
Receipts and Disbursements
of the
Asiatic Society of Bengal
for
the Year 1929

STATEMENT No. 1.

1929.

Asiatic Society

Dr.

To ESTABLISHMENT.

			Rs.	As.	P.	Rs.	As.	P.
Salaries and Allowances	..	..	26,412	13	6			
Commission	..	..	463	2	3			
						26,875	15	9

To CONTINGENCIES.

Stationery	..	..	793	7	0			
Fan and Light	..	..	458	13	0			
Telephone	..	..	234	15	2			
Taxes	..	..	1,753	4	0			
Postage	..	..	2,211	8	0			
Freight	..	..	17	4	0			
Contingencies	..	..	835	12	6			
Printing Circulars, etc.	..	..	2,130	1	0			
Audit Fee	..	..	250	0	0			
Petty Repairs	..	..	76	14	0			
Insurance	..	..	500	0	0			
Menials' Clothing	..	..	125	8	0			
Furniture	..	..	389	3	6			
Building Repairs	..	..	921	3	0			
Legal Fees	..	..	477	13	0			
						11,175	10	2

To LIBRARY AND COLLECTIONS.

Books	..	..	2,650	13	0			
Binding	..	..	1,738	10	0			
						4,389	7	0

To PUBLICATIONS.

Journal and Proceedings and Memoirs	..	..	15,931	2	6			
						15,931	2	6

To CONTRIBUTIONS.

Indian Science Congress for 1929	..	..	250	0	0			
Provident Fund Contribution for 1929	..	..	505	14	0			
						755	14	0

To SUNDRY ADJUSTMENTS.

Bad Debts written-off	..	..	1,286	13	0			
Depreciation on Investments revalued on								
31-12-29	..	..	12,509	6	0	13,796	3	0
Balance as per Balance Sheet	..	..	..			1,73,740	3	11
TOTAL	..	..				2,46,664	8	4

STATEMENT No. 1.

of Bengal.

1929.

Cr.

	Rs.	As.	P.	Rs.	As.	P.
By Balance from last Account				1,85,413	12	8

BY CASH RECEIPTS.

Interest on Investments	10,211	4	0			
Miscellaneous	542	14	3			
Government Allowance	2,000	0	0			
Advertising	4,975	8	11			
Donation	400	0	0			
Rent	600	0	0			
Assam Govt. allow. for Publications ..	1,930	0	0			
				20,659	11	2

BY PERSONAL ACCOUNT.

Members' Subscriptions	16,693	0	0			
Compounding Subscriptions	903	0	0			
Admission Fees	2,064	0	0			
Institutional Membership Fees	100	0	0			
Miscellaneous	8	12	0			
				19,768	12	0

BY TRANSFER FROM FUNDS.

Proportionate Share in General Expen- diture by various Funds	10,000	0	0			
Publication Fund for Publications ..	10,822	4	6			
				20,822	4	6

TOTAL .. 2,46,664 8 4

STATEMENT No. 2.

Fund, No. 1, in Account with A.S.B.

1929.

cation of Oriental Works and Works of Instruction in Eastern Languages
Works hitherto unpublished (Rs. 250).

Cr.

BY CASH RECEIPTS.

	Rs.	As.	P.	Rs.	As.	P.
Annual Grant	8,250	0	0
By Balance as per Balance Sheet	3,755	3	10

TOTAL ..	12,005	3	10
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STATEMENT No. 3.

Fund, No. 2, in Account with A.S.B.

1929.

Rs. 250 for the publication of Arabic and Persian Works of
Interest.

Cr.

	Rs.	As.	P.	Rs.	As.	P.
By Balance from last Account	953	7	0
TOTAL	953	7	0

STATEMENT No. 4.

Account, in Account with A.S.B.

1929.

for the publication of the Catalogue of Sanskrit Manuscripts acquired
same Government for Research Work.

Cr.

		Rs.	As.	P.	Rs.	As.	P.
By Balance from last Account			13,761	2	3

BY CASH RECEIPTS.

Annual Grant for Research Work, 1929-30		3,600	0	0			
Annual Grant for Cataloguing, 1928-29 ..	..	3,200	0	0			
Annual Grant for Cataloguing, 1929-30 ..	..	3,200	0	0			
					10,000	0	0
TOTAL ..					23,761	2	3

STATEMENT No. 5.

Fund Account, in Account with A.S.B.

1929.

the cataloguing and binding of Arabic and Persian Manuscripts, acquired
and for the preparation of notices of Arabic and Persian
various Libraries in India.

Cr.

BY CASH RECEIPTS.

		Rs.	As.	P.	Rs.	As.	P.
By Balance from last Account			1,889	13	3
By Balance as per Balance Sheet			5,751	1	3
TOTAL ..					7,640	14	6

STATEMENT No. 6.

1929.

Barclay Memorial

From a sum of Rs. 500 odd given in 1896 by the Surgeon
encouragement of Medical

Dr.

	Rs.	As.	P.	Rs.	As.	P.
To Depreciation Investments revalued on 31-12-29	27	0	0
To Balance as per Balance Sheet— Rs. 400, 3½% G.P.N., 1854-55	}	..	408	0	0	
„ 100, „ „ 1900-01						
„ 100, „ „ 1865						
Accumulated Cash Balance	91	12	8	499	12
					8	
TOTAL	..			526	12	8

STATEMENT No. 7.

1929.

Servants' Pension Fund

Founded in 1876 as the Piddington Pension Fund

Dr.

	Rs.	As.	P.	Rs.	As.	P.
To Depreciation Investments revalued on 31-12-29	90	0	0
To Balance as per Balance Sheet— Rs. 2,000, 3½% G.P. Notes	..	1,360	0	1,624	9	1
Accumulated Cash Balance	..	264	9			
TOTAL	..			1,714	9	1

STATEMENT No. 6.

Fund Account, in Account with A.S.B.

1929.

General, I.M.S., for the foundation of a medal for the
and Biological Science.

Cr.

		Rs. As. P.	Rs. As. P.
By Balance from last Account	509 6 8

BY CASH RECEIPTS.

Interest realized during the year ..	..	..	17 6 0
TOTAL ..	..	..	<u>526 12 8</u>

STATEMENT No. 7.

Account, in Account with A.S.B.

1929.

with Rs. 500 odd from the Piddington Fund.

Cr.

		Rs. As. P.	Rs. As. P.
By Balance from last Account	1,644 9 1

BY CASH RECEIPTS.

Interest realized for the year ..	..	..	70 0 0
TOTAL ..	..	..	<u>1,714 9 1</u>

STATEMENT No. 8.

Account, in Account with A.S.B.

1929.

towards the rebuilding of the Society's premises, and from the sale of the Society's land.

Cr.			
	Rs.	As.	P.
By Balance from last Account	11,392 6 6
BY CASH RECEIPTS.			
Interest realized for the year	455 0 0
TOTAL ..			<u>11,847 6 6</u>

STATEMENT No. 9.

lications, Calcutta, in Account with A.S.B.

1929.

Cr.			
	Rs.	As.	P.
By Balance from last Account	415 0 0
TOTAL ..			<u>415 0 0</u>

STATEMENT No. 10.

tific Literature, in Account with A.S.B.

1929.

Cr.			
	Rs.	As.	P.
By Balance from last Account	4,424 7 8
TOTAL ..			<u>4,424 7 8</u>

STATEMENT No. 11.

1929.

Akbarnama Reprint

From a sum set apart in 1923 for

Dr.

		Rs.	As.	P.
To Balance as per Balance Sheet	..	7,764	10	8
TOTAL	..	7,764	10	8

STATEMENT No. 12.

1929.

Publication Fund

From sale proceeds

Dr.

TO CASH EXPENDITURE.

		Rs.	As.	P.	Rs.	As.	P.
Printing .. .. .	..	1,183	5	7	1,183	5	7
To Proportionate Share in General Expenditure .. .. .	..	2,500	0	0			
To Publications of the A.S.B. .. .. .	..	10,822	4	6			
To Exchange difference on Fixed Deposit (London) .. .. .	..	0	2	2			
To Books returned, etc. .. .. .	..	83	2	6			
To Balance as per Balance Sheet .. .. .	..				13,405	9	2
TOTAL .. .. .	..				11,141	14	8
					25,730	13	5

STATEMENT No. 11.

Account, in Account with A.S.B.

1929.

the reprint of the Akbarnama in England.

Cr.

			Rs.	As.	P.
By Balance from last Account ..	..	..	7,764	10	8
TOTAL	..	..	7,764	10	8

STATEMENT No. 12.

Account, in Account with A.S.B.

1929.

of publications.

Cr.

			Rs.	As.	P.	Rs.	As.	P.
By Balance from last Account				13,731	13	5

BY CASH RECEIPTS.

Cash Sales of Publications	876	11	6		876	11	6
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BY PERSONAL ACCOUNT.

Credit Sales of Publications	9,280	4	6				
Subscriptions to Journal and Proceedings	1,542	0	0				
					10,822	4	6	
By Interest on fixed Deposit, London ..	..				300	0	0	
TOTAL	..				25,730	13	5	

STATEMENT No. 13.

1929.

Provident Fund Ac-

From contributions by the

Dr.

TO CASH EXPENDITURE.

	Rs.	As.	P.	Rs.	As.	P.
Refund of Deposit	67	10	5
To Balance as per Balance Sheet	5,602	2	5

TOTAL ..	5,669	12	10
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STATEMENT No. 14.

1929.

Sir William Jones Memorial

From a sum gifted for the purpose in

Dr.

TO CASH EXPENDITURE.

	Rs.	As.	P.	Rs.	As.	P.
Cost of Medal .. ..	..	..	..	186	5	0
To Depreciation Investments revalued on 31-12-29 .. ..	..	..	..	135	0	0
To Balance as per Balance Sheet—						
Rs. 3,000, 3½% G.P. Notes ..	2,040	0	0			
Accumulated Interest ..	94	8	0			
				2,134	8	0
TOTAL ..				2,455	13	0

STATEMENT No. 13.

count, in Account with A.S.B.

1929.

Society and its Staff.

Cr.

		Rs. As. P.	Rs. As. P.
By Balance from last Account	4,550 11 3

BY CASH RECEIPTS.

Staff Contribution for the year ..	..	505 14 0	
A.S.B. Contribution for the year ..	..	505 14 0	
			1,011 12 0
By Interest realized for the year 1928 ..	..	..	107 5 7
TOTAL ..	..		5,669 12 10

STATEMENT No. 14.

Fund Account, in Account with A.S.B.

1929.

1926, by Dr. U. N. Brahmachari.

Cr.

		Rs. As. P.	Rs. As. P.
By Balance from last Account	2,175 4 0

BY CASH RECEIPTS.

Interest realized for the year ..	..	94 4 0	
Donation ..	..	186 5 0	
			280 9 0
TOTAL ..	..		2,455 13 0

STATEMENT No. 15.

1929.

Annandale Memorial Fund

From donations by subscription,

Dr.

	Rs.	As.	P.	Rs.	As.	P.
To Depreciation Investments revalued on 31-12-29	135	0	0
To Balance as per Balance Sheet—						
Rs. 3,000, 3½% G.P. Notes	2,040	0 0			
Accumulated Cash Balance	521	13 0			
				2,561	13	0
TOTAL	..			2,696	13	0

STATEMENT No. 16.

1929.

Permanent Library Endowment

From gifts received,

Dr.

TO CASH EXPENDITURE.

	Rs.	As.	P.	Rs.	As.	P.
Purchase of Investments	2,218	6	3
To Depreciation Investments revalued on 31-12-29	1,320	0	0
To Balance as per Balance Sheet—						
Rs. 11,000, 3½% G.P. Notes	7,480	0 0			
Accumulated Cash Balance	157	11 5			
				7,637	11	5
TOTAL	..			11,176	1	8

STATEMENT No. 15.

Account, in Account with A.S.B.

1929.

started in 1926.

Cr.

		Rs.	As.	P.	Rs.	As.	P.
By Balance from last Account	2,602	3	0

BY CASH RECEIPTS.

Interest realized for the year ..	..	..	..	..	94	10	0
TOTAL	..	..	..	..	2,696	13	0

STATEMENT No. 16.

Fund Account, in Account with A.S.B.

1929.

started in 1926.

Cr.

		Rs.	As.	P.	Rs.	As.	P.
By Balance from last Account	5,806	8	8

BY CASH RECEIPTS.

Interest realized for the year ..	..	..	349	5	0		
Donations ..	..	..	2,020	4	0		
						2,369	9 0
By Purchase of Investments, credited, Face Value ..	..	..	..	..	..	3,000	0 0
TOTAL	..	..	..	..	..	11,176	1 8

STATEMENT No. 17.

1929.

Calcutta Science Congress Prize

From a sum gifted for the purpose by

Dr.

TO CASH EXPENDITURE.

		Rs.	As.	P.	Rs.	As.	P.
Purchase of Investments	.. ..	..			2,234	12	8
To Depreciation Investments revalued on	31-12-29	..			960	0	0
To Balance as per Balance Sheet—							
Rs. 3,000, 3½% G.P. Notes	.. ..	2,040	0	0			
Accumulated Cash Balance	.. ..	51	6	7			
					2,091	6	7
TOTAL	..				5,286	3	3

STATEMENT No. 18.

1929.

Dr. Brühl Memorial

From a sum gifted for the purpose by

Dr.

TO CASH EXPENDITURE.

		Rs.	As.	P.	Rs.	As.	P.
Purchase of Investments	.. ..	..			730	12	2
To Depreciation of Investments revalued on	31-12-29	..			320	0	0
To Balance as per Balance Sheet—							
Rs. 1,000, 3½% G.P. Notes	.. ..	680	0	0			
Accumulated Cash Balance	.. ..	215	11	0			
					895	11	0
TOTAL	..				1,946	7	2

STATEMENT No. 17.

Fund Account, in Account with A.S.B.

1929.

the Local Committee, Indian Science Congress, Calcutta, 1928.

Cr.

		Rs. As. P.	Rs. As. P.
By Balance from last Account	2,239 1 3

BY CASH RECEIPTS.

Interest realized during the year ..	..	47 2 0
By Investments purchased during the year
credited at Face Value	3,000 0 0

TOTAL	..	5,286 3 3
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STATEMENT No. 18.

Fund Account, in Account with A.S.B.

1929.

the Brühl Farewell Committee, 1929.

Cr.

BY CASH RECEIPTS.

		Rs. As. P.	Rs. As. P.
Funds received during the year ..	..	930 12 2	
Interest realized during the year ..	..	15 11 0	
			946 7 2
By Investments purchased during the year	..	..	..
credited at Face Value ..	..	..	1,000 0 0
TOTAL	..		1,946 7 2

STATEMENT No. 19.

1929.

Joy Gobind Law Memorial

From a donation for the purpose

Dr.

TO CASH EXPENDITURE.

	Rs.	As.	P.	Rs.	As.	P.
Purchase of Investments	2,181	5	0
To Depreciation Investments revalued on 31-12-29	960	0	0
To Balance as per Balance Sheet—						
Rs. 3,000, 3½% G.P. Notes	2,040	0	0		
Accumulated Cash Balance	215	13	0		
				2,255	13	0
TOTAL				5,397	2	0

STATEMENT No. 20.

1929.

Loan

Dr.

	Rs.	As.	P.
To Balance from last Account	300 0 0
TO CASH EXPENDITURE			
Advance paid to members of Staff	300 0 0
TOTAL	600 0 0

STATEMENT No. 21.

1929.

Fixed Deposit

From a sum set aside to pay for the

Dr.

	Rs.	As.	P.	Rs.	As.	P.
To Balance from last Account	7,778	4	5
To Interest accrued on Fixed Deposit	300	0	0
TOTAL	8,078	4	5

STATEMENT No. 19.

Fund Account, in Account with A.S.B.

1929.

by Dr. Satya, Churn Law, 1929.

Cr.

BY CASH RECEIPTS.

		Rs.	As.	P.	Rs.	As.	P.
Funds received during the year	..	2,350	0	0			
Interest realized during the year	..	47	2	0			
					2,397	2	0
By Investments purchased during the year	..						
credited at Face Value	..				3,000	0	0
TOTAL	..				5,397	2	0

STATEMENT No. 20.

Account, in Account with the A.S.B.

1929.

Cr.

BY CASH RECEIPTS.

					Rs.	As.	P.
Return of Advances	..	..	..	..	210	0	0
By Balance as per Balance Sheet	..	..	..	..	390	0	0
TOTAL	..	..	..	..	600	0	0

STATEMENT No. 21.

Account, London.

1929.

printing of the Kashmiri Dictionary.

Cr.

					Rs.	As.	P.
By Printing Charges	..	..	..	..	1,183	5	7
By Exchange difference on 31-12-29	..	..	..	..		0	2
By Balance as per Balance Sheet	..	..	..	..	6,894	12	8
TOTAL	..	..	..	..	8,078	4	5

STATEMENT No. 22.

1929.

Personal

Dr.		Rs.	As.	P.	Rs.	As.	P.
To Balance from last Account ..	..	..	..	..	784	3	11
To Advances ..	..	..	..	..	7,363	2	7
Asiatic Society's Subscriptions, etc. ..	..	19,768	12	0			
Subscriptions to Journal and Proceedings and from Book Sales, etc., from Publica- tion Fund	10,822	4	6			
					30,591	0	6

TOTAL	..	38,738	7	0
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STATEMENT No. 23.

1929.

(1) Investment Account

Dr.		Rs.	As.	P.	Rs.	As.	P.
To Balance from last Account	4,250	11	3
To Deposits of Contributions during the year ..	..	944	1	7			
To Deposits of Advances, returned ..	..	210	0	0			
To Interest realized for the year 1928 ..	..	107	5	7			
					1,261	7	2
TOTAL	..				5,512	2	5

STATEMENT No. 24.

1929.

(2) Investment Account

Dr.		Rs.	As.	P.
To Balance from last Account ..	..	20,000	0	0
TOTAL	..	20,000	0	0

STATEMENT No. 22.

Account.

1929.

Cr.

	Rs.	As.	P.	Rs.	As.	P.
By Cash Receipts during the year ..						
By Bad Debts written off, A.S.B. Account ..	1,286	13	0	33,173	12	0
By Bad Debts written off, Pub. Fund Account.. ..	83	2	6			
				1,369	15	6

By Outstandings.	Amount due to the Society.			Amount due by the Society.		
	Rs.	As.	P.	Rs.	As.	P.
Members ..	8,974	13	0	853	13	0
Subscribers ..				84	0	0
Bill Collector's ..						
Deposit ..				100	0	0
Miscellaneous ..		4	3	226	8	9
	4,959	1	3	764	5	9

By Balance .. 4,194 11 6

TOTAL .. 38,738 7 0

STATEMENT No. 23.

(Savings Bank Deposit, Imperial Bank of India).

1929.

Cr.

	Rs.	As.	P.	Rs.	As.	P.
By withdrawal of Deposits for payment of advance ..				300	0	0
By Balance as per Balance Sheet ..				5,212	2	5
TOTAL ..				5,512	2	5

STATEMENT No. 24.

(Fixed Deposit, Imperial Bank of India).

1929.

Cr.

	Rs.	As.	P.
By withdrawal of Deposit ..	10,000	0	0
By Balance as per Balance Sheet ..	10,000	0	0
TOTAL ..	20,000	0	0

STATEMENT No. 25.

1929.

(3) Investment

Dr.

	Rs.	As.	P.	Rs.	As.	P.
To Balance from last Account ..	3,00,200	0	0	2,89,106	3	10
To Purchase of Investments for—						
The P.L.E. Fund ..	3,000	0	0	3,000	0	0
The Cal. Sc. Congress P. Fund ..	3,000	0	0	3,000	0	0
The Joy Gobind Law Ml. Fund ..	3,000	0	0	3,000	0	0
Dr. Brühl Ml. Fund ..	1,000	0	0	1,000	0	0
TOTAL ..	3,10,200	0	0	2,99,106	3	10

Face Value Rs.	FUNDS.	Rate @ Rs. %	31st December, 1929, Valuation.	Valuation as per Individual Account.	Less Depreciation on 31st December, 1929.
			Rs. A. P.	Rs. A. P.	Rs. A. P.
ASIATIC SOCIETY OF BENGAL.					
PERMANENT RESERVE.					
16,700	3½% G. Loan No. 155119, 1842-43 ...	68/-	1,40,167 4 0	1,95,106 13 10	54,939 9 10
1,00,000	3½% G. Loan No. 216811, 1854-55 ...	68/-			
58,700	3½% G. Loan No. 216812, 1854-55 ...	68/-			
5,000	3½% G. Loan No. 029544, 1879 ...	68/-			
1,000	3½% G. Loan No. 029548, 1879 ...	68/-			
29,800	3½% G. Loan Part of No. 337428, 1865	68/-	58¼/-		
500	3½% G. Loan No. 066715, 1896-97 ...				
TEMPORARY RESERVE.					
2,000	3½% G. Loan Part of No. 337428, 1865	68/-	45,915 4 0	64,529 0 0	18,618 12 0
25,000	3½% G. Loan No. 238369, 1900-01 ...	68/-			
26,000	3½% G. Loan No. 238816, 1900-01 ...	68/-			
11,400	4½% G. Loan, 1935-60 ...	86½/-			
BUILDING FUND.					
13,000	3½% G. Loan Part of No. 337428, 1865	68/-	8,840 0 0	13,000 0 0	4,160 0 0
PENSION FUND.					
2,000	3½% G. Loan No. 029546, 1879 ...	68/-	1,360 0 0	1,870 6 0	510 6 0
BARCLAY MEMORIAL FUND.					
300	3½% G. Loan No. 170971, 1854-55 ...	68/-	408 0 0	600 0 0	192 0 0
100	3½% G. Loan No. 220763, 1854-55 ...	68/-			
100	3½% G. Loan No. 304677, 1900-01 ...	68/-			
100	3½% G. Loan No. 354795, 1895 ...	68/-			
SIR WILLIAM JONES MEMORIAL FUND.					
1,500	3½% G. Loan, 1854-55 ...	68/-	2,040 0 0	3,000 0 0	960 0 0
1,500	3½% G. Loan, 1900-01 ...	68/-			
ANNANDALE MEMORIAL FUND.					
3,000	3½% G. Loan, 1842-43 ...	68/-	2,040 0 0	3,000 0 0	960 0 0
PERMANENT LIBRARY ENDOWMENT FUND.					
5,000	3½% G. Loan No. 230065, 1854-55 ...	68/-	7,480 0 0	11,000 0 0	3,520 0 0
2,000	3½% G. Loan No. 231119, 1854-55 ...	68/-			
1,000	3½% G. Loan No. 234698, 1854-55 ...	68/-			
3,000	3½% G. Loan Nos. 235353-55, 1854-55	68/-			
CALCUTTA SCIENCE CONGRESS PRIZE FUND.					
3,000	3½% G. Loan No. 235851, 1854-55 ...	68/-	2,040 0 0	3,000 0 0	960 0 0
DR. BRÜHL MEMORIAL FUND.					
1,000	3½% G. Loan No. 235843, 1854-55 ...	68/-	680 0 0	1,000 0 0	320 0 0
JOY GOBIND LAW MEMORIAL FUND.					
1,000	3½% G. Loan No. 213534, 1854-55 ...	68/-	2,040 0 0	3,000 0 0	960 0 0
1,000	3½% G. Loan No. 213535, 1854-55 ...	68/-			
500	3½% G. Loan No. 213536, 1854-55 ...	68/-			
500	3½% G. Loan No. 219673, 1854-55 ...	68/-			
3,10,200			2,13,010 8 0	2,99,106 3 10	86,095 11 10

STATEMENT No. 25.

Account (Government Securities).

1929.

Cr.

	Rs.	As.	P.	Rs.	As.	P.
Balance as per Balance Sheet	..	3,10,200	0 0	2,13,010	8 0	
Less Depreciation on Investments re-	..					
valued on 31st December, 1929		86,095	11 10	

TOTAL	..	<u>3,10,200</u>	<u>0 0</u>	<u>2,99,106</u>	<u>3 10</u>	
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STATEMENT No. 26.

1929.

Cash

For the year to 31st

Dr.							
To		Rs.	As.	P.	Rs.	As.	P.
Balance from last Account			5,794	9	11
Asiatic Society of Bengal	.. ..	20,659	11	2			
Oriental Publication Fund No. 1 Account	.. ..	8,250	0	0			
Sanskrit Manuscripts Fund Account	.. ..	10,000	0	0			
Barclay Memorial Fund Account	.. ..	17	6	0			
Servants' Pension Fund Account	.. ..	70	0	0			
Building Fund Account	.. ..	455	0	0			
Publication Fund Account	.. ..	876	11	6			
Provident Fund Account	.. ..	1,011	12	0			
Sir William Jones Memorial Fund Account	.. ..	280	9	0			
Annandale Memorial Fund Account	.. ..	94	10	0			
Permanent Library Endowment Fund Account	.. ..	2,369	9	0			
Calcutta Science Congress Prize Fund Account	.. ..	47	2	0			
Dr. Brühl Memorial Fund Account	.. ..	946	7	2			
Joy Gobind Law Memorial Fund Account	.. ..	2,397	2	0			
Loan Account	.. ..	210	0	0			
Fixed Deposit Account (London)	.. ..	1,183	5	7			
Personal Account	.. ..	33,173	12	0			
Savings Bank Deposit Account	.. ..	300	0	0			
Fixed Deposit Account (Calcutta)	.. ..	10,000	0	0			
					92,343	1	5
TOTAL	.. ..				98,137	11	4

STATEMENT No. 26.

Account.

1929.

December, 1929.

Cr.							
By		Rs.	As.	P.	Rs.	As.	P.
Asiatic Society of Bengal	59,128	1	5				
Oriental Publication Fund No. 1 Account ..	8,690	10	0				
Oriental Publication Fund No. 2 Account ..	447	8	0				
Sanskrit Manuscripts Fund Account ..	4,824	5	0				
Arabic and Persian Manuscripts Fund Account	5,140	14	6				
Publication Fund Account	1,183	5	7				
Provident Fund Account	67	10	5				
Sir William Jones Memorial Fund Account ..	186	5	0				
Permanent Library Endowment Fund Account	2,218	6	3				
Calcutta Science Congress Prize Fund Account	2,234	12	8				
Dr. Brühl Memorial Fund Account	730	12	2				
Joy Gobind Law Memorial Fund Account ..	2,181	5	0				
Loan Account	300	0	0				
Personal Account	7,363	2	7				
Savings Bank Deposit Account ..	1,154	1	7				
					95,851	4	2
Balance					2,286	7	2
TOTAL ..					98,137	11	4

STATEMENT No. 27.

1929.

Balance

As at 31st

LIABILITIES.

	Rs.	As.	P.	Rs.	As.	P.
Asiatic Society of Bengal	1,73,740	3	11			
Oriental Publication Fund No. 2	505	15	0			
Sanskrit Manuscripts Fund Account	16,936	13	3			
Barclay Memorial Fund Account	499	12	8			
Servants' Pension Fund Account	1,624	9	1			
Building Fund Account	11,262	6	6			
Catalogue of Scientific Serial Publication (Calcutta)	415	0	0			
International Catalogue of Scientific Literature (London)	4,424	7	8			
Akbarnama Reprint Account	7,764	10	8			
Publication Fund Account	11,141	14	8			
Provident Fund Account	5,602	2	5			
Sir William Jones Memorial Fund Account	2,134	8	0			
Annandale Memorial Fund Account	2,561	13	0			
Permanent Library Endowment Fund Account	7,637	11	5			
Calcutta Science Congress Prize Fund Account	2,091	6	7			
Dr. Brühl Memorial Fund Account	895	11	0			
Joy Gobind Law Memorial Fund Account	2,255	13	0			
				2,51,494	14	10
TOTAL				2,51,494	14	10

We have examined the above Balance Sheet and the appended detailed accounts with the Books and Vouchers presented to us and certify that they are in accordance therewith, and set forth correctly the position of the Society as at 31st December, 1929.

PRICE, WATERHOUSE, PEAT & Co.,

Calcutta,
January 27th, 1930.

Auditors,
Chartered Accountants.

[APPENDIX IV.]

Abstract Proceedings Council, 1929.

(Rule 48 f.)

ADVERTISING—

Finance Committee No. 4 (4) of 24-4-29. Bankruptcy C. Newton Nell.
Recommendation: Action of filing claim approved. Accepted by
Council.

No. 3. 29-4-29.

Letter from Messrs. Clarke, Rawlins, Ker & Co., regarding the India
Publicity Co. Record.

No. 11. 25-11-29.

ANNUAL MEETING—

Annual Report. Approved.

No. 20. 28-1-29.

Annual Meeting. Arrangements approved.

No. 21. 28-1-29.

Sanskrit address to the Patron in the Annual Meeting. No Sanskrit
address.

No. 24. 28-1-29.

The Annual Meeting of the Society in the local press. Record.

No. 1. 25-2-29.

Reply from the Private Secretary to H.E. the Governor of Bengal in-
timating that H.E. will not be able to be present at the Annual Meeting.
Record.

No. 20. 16-12-29.

ASSOCIATE MEMBERS—

Recommendation by MM. H. P. Shastri to elect MM. Pandit
Sadasiva Misra, Kavya-Kantha, for election as an Associate Member.
Put up for election.

No. 16. 25-3-29.

Proposal from Dr. J. H. Hutton for the election of Rai Bahadur
S. C. Roy of Ranchi as an Associate Member of the Society. Accept
recommendation and place before next General Meeting in conformity
with the Rules.

No. 11 (2). 30-9-29.

Letter of thanks for his election as an Associate Member from Rai
Bahadur S. C. Roy. Record.

No. 2. 16-12-29.

BIBLIOTHECA INDICA—

Letter from Dr. F. W. Thomas conveying his appreciation of the
Society's work. Record.

No. 2. 28-1-29.

Letters of appreciation of the Society's work by Profs. Caland and Sten Konow. Record.

No. 1. 29-7-29.

Report progress printing of the Kashmiri Dictionary. Record.

No. 2. 29-7-29.

Modification of the Regulations—Sub-section B., Bibliotheca Indica.

No. 1, for "Philological Secretary", read "General Secretary".

„ 2, for "Philological Secretary to consult", read "General Secretary shall consult the Philological Secretary, and shall further consult".

„ 3, line 2, for "to be", read "shall be".

„ 5, line 1, for "to be", read "shall be".

„ 5, line 3, for "Philological Secretary" read "General Secretary".

Emendations accepted.

No. 3. 29-7-29.

Report issue of the revised Bibliotheca Indica Catalogues. Record, with a vote of thanks to the General Secretary.

No. 4. 16-12-29.

Report issue of the 3rd part of the Kashmiri Dictionary by Sir George Grierson. Record.

No. 20. 16-12-29.

BUILDING—

Report installation of a new tank in the retiring room for the filtered water supply. Action approved.

No. 5. 28-1-29.

Taxi-cab stand in front of the Society's premises. Write to the Commissioner of Police requesting cancellation of the stand in view of building plans for the triangular site to the south of the main building.

No. 18. 25-2-29.

Letter from the Commissioner of Police in connection with the new taxi stand site in front of the Society's building. Record.

No. 8. 25-3-29.

Special Finance Committee No. 1 of 11-12-29. Consideration of Budget estimate for 1930. Further recommended the opening of a separate Building Repairs Fund to which the annual budget allocation under this head is to be credited. Council order: Pass.

No. 12. 16-12-29.

COMMITTEES—

Constitution of Standing Committees, 1929-30. Previous year's Committees to continue.

No. 12. 25-2-29.

CONGRATULATIONS AND THANKS—

Letter of thanks from the Indian Science Congress. Record.

No. 1. 28-1-29.

Further correspondence from Dr. S. C. Law to the President in connection with the institution of a Zoology Gold Medal. Convey thanks to donor, accept gift. Rules and conditions of the award to be fixed by

a Committee consisting of the President, Treasurer, General Secretary and Col. Sewell in consultation with donor. Suggest that the medal be named after Joy Gobind Law.

No. 9.

28-1-29.

Presentation by Lt.-Col. R. N. Chopra, I.M.S., of his work on Anthelmintics. Thanks and congratulations to donor.

No. 23.

28-1-29.

Letter of thanks to Council from Sir D. P. Sarvadhikary for the resolution of thanks as an outgoing member of Council. Record.

No. 1.

25-3-29.

Letter of thanks to the Society from the Rt. Hon'ble Sir Benode C. Mitter for the congratulation sent to him at the occasion of his nomination to the Judicial Committee of the Privy Council. Record.

No. 2.

25-3-29.

Letter of thanks from Sir Edward Maclagan for electing him an Ordinary Fellow of the Society. Record.

No. 3.

25-3-29.

Letter from Lt.-Col. R. B. S. Sewell, resigning his seat on the Council. The Council's thanks to be conveyed to Col. Sewell.

No. 7.

25-3-29.

Letter of thanks from Dr. S. L. Hora. Record.

No. 1.

29-4-29.

Congratulation to Lt.-Col. R. B. S. Sewell at the occasion of receiving a Doctorate from Cambridge. Record.

No. 1.

26-8-29.

The General Secretary reported presentation to the Society of two specimens of petrified wood from Chittagong and four Sanskrit MSS., by Pandit Rajani Kanta Sahityacharya, Principal, Sanskrit College, Chittagong. Convey thanks to the donor.

No. 11.

29-7-29.

Letter of thanks from Lt.-Col. R. B. S. Sewell. Record.

No. 1.

30-9-29.

Letter of thanks from Sir R. N. Mookerjee for nominating him as an Honorary Fellow of the Society. Record.

Donation from Sir R. N. Mookerjee for procuring the new edition of the Encyclopædia Britannica. Accept with thanks to the donor.

No. 2.

28-10-29.

Intimation from MM. H. P. Shastri that for reasons of health he has decided to resign his seat on the Board of Trustees of the Indian Museum on behalf of the Society. Resignation accepted with warm thanks to the Shastri for the valuable services rendered by him as the Society's nominee. Further resolved to nominate Dr. U. N. Brahmachari as the Society's representative in succession to MM. Haraprasad Shastri.

No. 3.

25-11-29.

Library copy of Hardwick's illustrations of Indian Zoology, completed, repaired, and bound by Dr. Baini Prashad and Dr. S. L. Hora. The Council's cordial thanks to be conveyed to Dr. Baini Prashad and Dr. S. L. Hora.

No. 4.

25-11-29.

Report issue of the revised Bibliotheca Indica Catalogues. Record,
with a vote of thanks to the General Secretary.

No. 4.

16-12-29.

COUNCIL—

Signatures signifying formal acceptance of election to the Council for
1929, and report thereon. Record.

No. 2.

25-2-29.

Letter from Lt.-Col. R. B. S. Sewell, resigning his seat on the Coun-
cil. The Council's thanks to be conveyed to Col. Sewell. Dr. Hora to
be Biological Secretary *vice* Col. Sewell.

No. 7.

25-3-29.

Absence Treasurer from Calcutta. Resolved that the General Secre-
tary (Mr. Johan van Manen) be authorised to officiate as Honorary
Treasurer to the Society during the absence of the Honorary Treasurer,
Dr. Baini Prashad, from Saturday, 26th October, 1929, until notification
of the latter's return to Calcutta and resumption of office.

No. 15 (b).

28-10-29.

Fixing dates of next Council and Committee meetings. Special
Budget meeting on December 9th, Council Meeting on December 16th.

No. 15.

25-11-29.

Informal consideration composition of Council for 1930-31.

After discussion the following list of candidates for nomination to
next year's Council was placed before the meeting for consideration :

President ..	..	Lt.-Col. R. B. S. Sewell.
Vice-President ..	..	Dr. U. N. Brahmachari.
" " ..	..	Mr. H. E. Stapleton.
" " ..	..	Mr. B. De.
" " ..	..	Dr. L. L. Fermor.
General Secretary ..	..	Mr. Johan van Manen.
Treasurer ..	..	Mr. K. C. Mahindra.
Phil. Secretary ..	..	MM. H. P. Shastri.
Jt. Phil. Secretary ..	..	Dr. M. Hidayat Hosain.
Nat. Hist. Secretary (Biology) ..	..	Dr. S. L. Hora.
Nat. Hist. Secretary (Phy. Sci.) ..	..	Dr. W. A. Jenkins.
Anthrop. Secretary ..	..	Dr. B. S. Guha.
Medical Secretary ..	..	Lt.-Col. R. Knowles.
Library Secretary ..	..	Lt.-Col. N. F. Barwell.
Member of Council ..	..	Dr. Baini Prashad.
" " ..	..	Rev. A. W. Young.
" " ..	..	Mr. B. B. Ghose.
" " ..	..	Sir J. C. Coyajee.
" " ..	..	Mr. Jas. Insch.
" " ..	..	Mr. K. C. De.

Resolved that the General Secretary do print and circulate to the
Members of the Council the list of the Council as at present constitu-
ted, together with the new list placed before the meeting, and provided
with a blank column for additional names; that these lists shall be
returned to the General Secretary within a week of date of issue, that
a list be compiled of the candidates finally proposed and be placed
before the next Council Meeting to be voted upon.

No. 22.

25-11-29.

Council nomination, 1929-30. The General Secretary reported that 19 Council members had returned the list of candidates circulated, duly signed and unanimously approved with a single alternative suggestion. Resolved that the list of names placed before the Council in the November Meeting be declared that of the Council candidates for election to next year's Council and that it be ordered to be sent out to the Resident Members, as prescribed in Rule 44.

No. 18.

16-12-29.

FELLOWS—

Recommendation, Election of Fellows, A.S.B., 1928-29.

- (1) Mr. A. Howard.
- (2) Dr. J. H. Hutton.
- (3) Sir Edward MacLagan.

Put up for election.

No. 14.

28-1-29.

Letter of thanks from Sir Edward MacLagan for electing him an Ordinary Fellow of the Society. Record.

No. 3.

25-3-29.

FINANCE—

Recommendations, Finance Committee, 25-1-29. Accept. Further resolved that the Treasurer be authorised to refund whenever practicable from the liquid assets of the Society the loan of Rs. 5,000 from the Indian Science Congress.

No. 15.

28-1-29.

Finance Committee No. 4 (3) of 20-2-29. Receipt from the Auditors of the copy of a statement of the Society's accounts for the year ending 1928, duly certified. Recommendation: Report to Council. Council order: Accept.

No. 8.

25-2-29.

Finance Committee No. 5 of 20-2-29. Investment Calcutta Science Congress Prize Donation. Recommend investment on $3\frac{1}{2}\%$ Government paper. Accepted by Council.

No. 8

25-2-29.

Auditors' certificate on the Society's accounts for 1928. Record.

No. 7.

25-2-29.

Opinion of The Hon'ble Mr. Justice C. C. Ghose, Kt., on the donation by the Local Committee of the Indian Science Congress, 15th Session, Calcutta, for the institution of a Congress Prize to be administered by the Society. Invest money without delay in Government $3\frac{1}{2}\%$ securities. A Committee, consisting of the President, General Secretary, and Messrs. Stapleton, Sewell, Raman and Knowles to consider the principle, ways and means of the Prize and to report to Council.

No. 14.

25-2-29.

Recommendations of the Special Committee to consider the donation of Rs. 2,239 (now invested in Rs. 3,000, $3\frac{1}{2}\%$ Govt. papers) from the Local Committee, Calcutta Session, Indian Science Congress, for the institution of a prize:—

1. Unanimously resolved to accept para (1) of the Committee's recommendations reading as follows:—

That the resolution of the Council of 29-8-28 (No. 3), that the previous approval of the Executive Committee of the Indian Science Congress should be obtained prior to the Council of

the Asiatic Society of Bengal accepting the donation, be rescinded.

2. Unanimously resolved not to accept paras (2), (3) and (4) of the Committee's recommendations and that, the Council being of opinion that the money which has been handed over to the Asiatic Society of Bengal by the Local Committee of the 15th Session, Indian Science Congress (Calcutta) is free from all restrictions, and that the Asiatic Society of Bengal is the body which should administer the Fund.
3. Further unanimously resolved, that in lieu of paras (2), (3) and (4) of the Committee's recommendations the following resolutions be substituted :—
 - (2) That the Fund be allowed to accumulate by the investment of the annual interest between Calcutta Sessions of the Indian Science Congress and that in the year of any session of the said Congress in Calcutta, the interest accruing that year may be spent on the award of a prize to be called the "Calcutta Prize".
 - (3) That the said prize be awarded for such meritorious work published by a member of the Indian Science Congress as may be determined by the Council of the Asiatic Society of Bengal after each session of the Indian Science Congress in Calcutta.
4. Also resolved to forward for information a copy of these resolutions to Dr. J. N. Mukherjee.

No. 9.

25-3-29.

Recommendations Finance Committee No. 4 (1) of 20-3-29. Resolved to recommend to Council to authorise the Treasurer to endorse $3\frac{1}{2}\%$ G.P. Notes of 1854-55 Nos. 235353, 235354, 235355 for Rs. 3,000 Face Value, to the Imperial Bank of India, Park Street Branch, Calcutta, for safe custody. Accepted by Council and further resolved that the Treasurer be authorised accordingly.

No. 10 (a).

25-3-29.

Recommendations Finance Committee No. 4 (2) of 20-3-29. Resolved to recommend to Council to authorise the Treasurer to endorse $3\frac{1}{2}\%$ G.P. Notes of 1854-55 Nos. 213534, 213535, 213536 and 219673 for Rs. 3,000 Face Value, to the Imperial Bank of India, Park Street Branch, Calcutta, for safe custody. Accepted by Council and further resolved that the Treasurer be authorised accordingly.

No. 10 (b).

25-3-29.

Recommendations Finance Committee No. 5 of 20-3-29. Maturing of fixed deposit of Rs. 10,000 with the Imperial Bank of India, Park Street Branch, on April 3rd, 1929.

Resolved to report to Council for instructions.

Call in deposit. Transfer to current account. Repay loan Indian Science Congress.

No. 10 (c).

25-3-29.

Recommendations Finance Committee No. 4 (1) of 24-4-29. Safe custody endorsement of $3\frac{1}{2}\%$ G.P. Note of 1854-55 No. 235851 to the face value of Rs. 3,000 for the Joy Gobind Law Memorial Medal Fund. Resolved to recommend to Council to authorise the Treasurer to endorse $3\frac{1}{2}\%$ G.P. Note of 1854-55 No. 235851 for Rs. 3,000 Face Value, to the Imperial Bank of India, Park Street Branch, Calcutta, for safe custody.

Accepted by Council and further resolved that the Treasurer be authorised accordingly.

No. 3 (a).

29-4-29.

Recommendations Finance Committee No. 4 (2) of 24-4-29. Safe custody endorsement of 3½% G.P. Note of 1854-55 No. 235843 to the face value of Rs. 1,000 for the Brühl Memorial Fund. Resolved to recommend to Council to authorise the Treasurer to endorse 3½% G.P. Note of 1854-55 No. 235843 for Rs. 1,000 Face Value, to the Imperial Bank of India, Park Street Branch, Calcutta, for safe custody.

Accepted by Council and further resolved that the Treasurer be authorised accordingly.

No. 3 (b).

29-4-29.

Finance Committee No. 4 (a) of 19-6-29. Maturing of fixed deposit of Rs. 10,000 with the Imperial Bank of India, Park Street Branch, on July 5th, 1929. Recommendation: Re-invest for one year.

Council order: Fixed deposit to be re-deposited for six months, if possible, otherwise for a year.

No. 4 (a).

24-6-29.

Finance Committee No. 4 (b) of 19-6-29. Application from Jamadar for salary for the two months he has been granted sick leave.

Recommendation: Refer to Council.

Leave pay to Jamadar granted as a compassionate grant.

No. 4 (b).

24-6-29.

Modification of the Regulations.

Regulations Consideration Annual Statement Accounts.

No. 1, line 5, for "Honorary Secretary", read "General Secretary".

No. 3, line 2, *id.*

Emendations accepted.

No. 3.

29-7-29.

Special Finance Committee No. 1 of 11-12-29. Consideration of Budget estimate for 1930.

Resolved to recommend to Council the adoption of the Society's Budget for 1930 as per statement.

Further recommended the opening of a separate Building Repairs Fund to which the annual budget allocation under this head is to be credited.

Also recommended to fix the annual increments in payment of staff as per attached schedule.

Also recommended that as a special case Babu S. K. Roy's grade of pay should be changed to one of 75-5-125 from the present one of 50-3-80, and that he should draw Rs. 85 as his initial pay from the date of his next increment.

Passed by Council.

No. 12.

16-12-29.

Finance Committee No. 4 (1) of 11-12-29. Society's contribution to the Indian Science Congress for the year 1929. Recommendation: Rs. 250. Accepted by Council.

No. 13.

16-12-29.

Finance Committee No. 4 (ii) of 11-12-29. Society's contribution to Staff Provident Fund for the year 1929. Recommendation: Pay. Accepted by Council.

No. 13.

16-12-29.

Finance Committee No. 4 (iii) of 11-12-29. Statement arrears of members whose subscriptions were written off during the year on account of death, resignation, Rule 38, etc. Recommendation: Authorise the writing off in the Society's books of an amount of Rs. 1,286-13

as per statement, and adjust accounts accordingly. Accepted by Council.

No. 13. 16-12-29.

FURNITURE—

Furniture. General Secretary to be authorised to purchase an additional block cabinet, a new reading desk, and a new blackboard.

No. 17. 25-3-29.

Ballot Boxes. General Secretary to arrange for sufficient number of ballot boxes.

No. 8. 27-5-29.

GRANTS—

Letter from the Government of Bengal, Department of Education, declining the request for a recurring grant in aid of the Society's Library. Record. General Secretary's suggestions approved.

No. 4. 30-9-29.

HONORARY FELLOWS—

Report deaths of two Honorary Fellows of the Society, viz. Sir Edwin Ray Lankester and Prof. W. H. Perkin. Record.

No. 2. 30-9-29.

Proposal from the President for the election of Dr. Charles J. H. Nicolle and of Sir Rajendra Nath Mookerjee as Honorary Fellows of the Society. Resolved by acclamation to recommend Sir Rajendra Nath Mookerjee for election; also resolved to recommend Dr. Charles J. H. Nicolle for election.

No. 3. 30-9-29.

Letter of thanks from Sir R. N. Mookerjee for nominating him as an Honorary Fellow of the Society. Record.

No. 1. 28-10-29.

Letter of thanks for his election as an Honorary Fellow from Sir R. N. Mookerjee. Record.

No. 1. 16-12-29.

INDIAN MUSEUM—

Intimation from MM. H. P. Shastri that for reasons of health he has decided to resign his seat on the Board of Trustees of the Indian Museum on behalf of the Society. Resignation accepted with warm thanks to the Shastri for the valuable services rendered by him as the Society's nominee. Further resolved to nominate Dr. U. N. Brahmachari as the Society's representative in succession to MM. Haraprasad Shastri.

No. 3. 25-11-29.

Letter from the Secretary of the Trustees of the Indian Museum, accepting the nomination of Dr. U. N. Brahmachari as the representative on the Board of Trustees, *vice* MM. H. P. Shastri, resigned. Record.

No. 19. 16-12-29.

INDIAN SCIENCE CONGRESS—

Reprint Proceedings of the Indian Science Congress. Sanction.

No. 10. 28-1-29.

Recommendations, Finance Committee, 25-1-29. Accept. Further resolved that the Treasurer be authorised to refund whenever practicable from the liquid assets of the Society the loan of Rs. 5,000 from the Indian Science Congress.

No. 15. *

28-1-29.

Finance Committee No. 5 of 20-2-29. Investment Calcutta Science Congress Prize Donation. Recommend investment on $3\frac{1}{2}\%$ Government paper. Accepted by Council.

No. 8.

25-2-29.

Opinion of Sir C. C. Ghose on the donation by the Local Committee of the Indian Science Congress, 15th Session, Calcutta, for the institution of a Congress Prize to be administered by the Society. Invest money without delay in Government $3\frac{1}{2}\%$ securities. A Committee, consisting of the President, General Secretary, and Messrs. Stapleton, Sewell, Raman and Knowles to consider the principle, ways and means of the Prize and to report to Council.

No. 14.

25-2-29.

Finance Committee No. 4 (2) of 20-3-29. Safe custody endorsement of $3\frac{1}{2}\%$ G.P. Notes of 1854-55 to the Face Value of Rs. 3,000 for the Calcutta Science Congress Prize Fund. Recommendation: Resolved to recommend to Council to authorise the Treasurer to endorse $3\frac{1}{2}\%$ G.P. Notes of 1854-55 Nos. 213534, 213535, 213536 and 219673 for Rs. 3,000 Face Value, to the Imperial Bank of India, Park Street Branch, Calcutta, for safe custody. Accepted by Council and further resolved that the Treasurer be authorised accordingly.

No. 10 (b).

25-3-29.

Recommendations of the Special Committee to consider the donation of Rs. 2,239 (now invested in Rs. 3000, $3\frac{1}{2}\%$ Govt. paper) from the Local Committee, Calcutta Session, Indian Science Congress, for the institution of a prize.

1. Unanimously resolved to accept para (1) of the Committee's recommendations reading as follows:—

That the resolution of the Council of 29-8-28 (No. 3), that the previous approval of the Executive Committee of the Indian Science Congress should be obtained prior to the Council of the Asiatic Society of Bengal accepting the donation, be rescinded.

2. Unanimously resolved not to accept paras (2), (3) and (4) of the Committee's recommendations and that, the Council being of opinion that the money which has been handed over to the Asiatic Society of Bengal by the Local Committee of the 15th Session, Indian Science Congress (Calcutta), is free from all restrictions, and that the Asiatic Society of Bengal is the body which should administer the Fund.
3. Further unanimously resolved, that in lieu of paras (2), (3) and (4) of the Committee's recommendations the following resolutions be substituted.
 - (2) That the Fund be allowed to accumulate by the investment of the annual interest between Calcutta Sessions of the Indian Science Congress and that in the year of any session of the said Congress in Calcutta, the interest accruing that year may be spent on the award of a prize to be called the "Calcutta Prize".
 - (3) That the said prize be awarded for such meritorious work published by a member of the Indian Science Congress as may be determined by the Council of the Asiatic Society of Bengal after each session of the Indian Science Congress in Calcutta.

as per statement, and adjust accounts accordingly. Accepted by Council.

No. 13. 16-12-29.

FURNITURE—

Furniture. General Secretary to be authorised to purchase an additional block cabinet, a new reading desk, and a new blackboard.

No. 17. 25-3-29.

Ballot Boxes. General Secretary to arrange for sufficient number of ballot boxes.

No. 8. 27-5-29.

GRANTS—

Letter from the Government of Bengal, Department of Education, declining the request for a recurring grant in aid of the Society's Library. Record. General Secretary's suggestions approved.

No. 4. 30-9-29.

HONORARY FELLOWS—

Report deaths of two Honorary Fellows of the Society, viz. Sir Edwin Ray Lankester and Prof. W. H. Perkin. Record.

No. 2. 30-9-29.

Proposal from the President for the election of Dr. Charles J. H. Nicolle and of Sir Rajendra Nath Mookerjee as Honorary Fellows of the Society. Resolved by acclamation to recommend Sir Rajendra Nath Mookerjee for election; also resolved to recommend Dr. Charles J. H. Nicolle for election.

No. 3. 30-9-29.

Letter of thanks from Sir R. N. Mookerjee for nominating him as an Honorary Fellow of the Society. Record.

No. 1. 28-10-29.

Letter of thanks for his election as an Honorary Fellow from Sir R. N. Mookerjee. Record.

No. 1. 16-12-29.

INDIAN MUSEUM—

Intimation from MM. H. P. Shastri that for reasons of health he has decided to resign his seat on the Board of Trustees of the Indian Museum on behalf of the Society. Resignation accepted with warm thanks to the Shastri for the valuable services rendered by him as the Society's nominee. Further resolved to nominate Dr. U. N. Brahmachari as the Society's representative in succession to MM. Haraprasad Shastri.

No. 3. 25-11-29.

Letter from the Secretary of the Trustees of the Indian Museum, accepting the nomination of Dr. U. N. Brahmachari as the representative on the Board of Trustees, *vice* MM. H. P. Shastri, resigned. Record.

No. 19. 16-12-29.

INDIAN SCIENCE CONGRESS—

Reprint Proceedings of the Indian Science Congress. Sanction.

No. 10. 28-1-29.

Recommendations, Finance Committee, 25-1-29. Accept. Further resolved that the Treasurer be authorised to refund whenever practicable from the liquid assets of the Society the loan of Rs. 5,000 from the Indian Science Congress.

No. 15. *

28-1-29.

Finance Committee No. 5 of 20-2-29. Investment Calcutta Science Congress Prize Donation. Recommend investment on $3\frac{1}{2}\%$ Government paper. Accepted by Council.

No. 8.

25-2-29.

Opinion of Sir C. C. Ghose on the donation by the Local Committee of the Indian Science Congress, 15th Session, Calcutta, for the institution of a Congress Prize to be administered by the Society. Invest money without delay in Government $3\frac{1}{2}\%$ securities. A Committee, consisting of the President, General Secretary, and Messrs. Stapleton, Sewell, Raman and Knowles to consider the principle, ways and means of the Prize and to report to Council.

No. 14.

25-2-29.

Finance Committee No. 4 (2) of 20-3-29. Safe custody endorsement of $3\frac{1}{2}\%$ G.P. Notes of 1854-55 to the Face Value of Rs. 3,000 for the Calcutta Science Congress Prize Fund. Recommendation: Resolved to recommend to Council to authorise the Treasurer to endorse $3\frac{1}{2}\%$ G.P. Notes of 1854-55 Nos. 213534, 213535, 213536 and 219673 for Rs 3,000 Face Value, to the Imperial Bank of India, Park Street Branch, Calcutta, for safe custody. Accepted by Council and further resolved that the Treasurer be authorised accordingly.

No. 10 (b).

25-3-29.

Recommendations of the Special Committee to consider the donation of Rs. 2,239 (now invested in Rs. 3000, $3\frac{1}{2}\%$ Govt. paper) from the Local Committee, Calcutta Session, Indian Science Congress, for the institution of a prize.

1. Unanimously resolved to accept para (1) of the Committee's recommendations reading as follows:—

That the resolution of the Council of 29-8-28 (No. 3), that the previous approval of the Executive Committee of the Indian Science Congress should be obtained prior to the Council of the Asiatic Society of Bengal accepting the donation, be rescinded.

2. Unanimously resolved not to accept paras (2), (3) and (4) of the Committee's recommendations and that, the Council being of opinion that the money which has been handed over to the Asiatic Society of Bengal by the Local Committee of the 15th Session, Indian Science Congress (Calcutta), is free from all restrictions, and that the Asiatic Society of Bengal is the body which should administer the Fund.

3. Further unanimously resolved, that in lieu of paras (2), (3) and (4) of the Committee's recommendations the following resolutions be substituted.

- (2) That the Fund be allowed to accumulate by the investment of the annual interest between Calcutta Sessions of the Indian Science Congress and that in the year of any session of the said Congress in Calcutta, the interest accruing that year may be spent on the award of a prize to be called the "Calcutta Prize".

- (3) That the said prize be awarded for such meritorious work published by a member of the Indian Science Congress as may be determined by the Council of the Asiatic Society of Bengal after each session of the Indian Science Congress in Calcutta.

4. Also resolved to forward for information a copy of those resolutions to Dr. J. N. Mukherjee.

No. 9.

25-3-29.

Finance Committee No. 4 (1) of 11-12-29. Society's contribution to the Indian Science Congress for the year 1929. Recommendation: Rs. 250. Accepted by Council.

No. 13.

16-12-29.

INSTITUTIONAL MEMBERSHIP—

Institutional Membership. Report joining as the first Institutional Member of the Legatum Warnerianum, the Oriental Department of the Library of the Leyden University. Record.

No. 15 (d).

28-10-29.

Application for Institutional Membership from the Adyar Library, Madras. Accept.

No. 24.

25-11-29.

KAMALA LECTURESHIP—

Representation on the Selection Committee, Kamala Lectureship, Calcutta University. The Council's nominee to be MM. H. P. Shastri.

No. 5.

25-3-29.

LEASE—

Draft Lease for the triangular plot on the Park Street side of the Society's property. Draft approved. General Secretary to be authorised to proceed.

No. 15.

25-2-29.

Progress report by the General Secretary in the matter of the proposed lease to Messrs. Lakhiraj Shewakaram & Co., Jewellers, for a plot of ground in the Society's compound. Resolved that Sir C. C. Ghose be requested kindly to go through the final copy of the proposed lease as prepared by Messrs. Clarke, Rawlins, Ker & Co. Further resolved that on receipt of approval by Sir C. C. Ghose, the General Secretary be authorised to sign the indenture of lease on behalf of the Council of the Asiatic Society of Bengal.

No. 7.

26-8-29.

Letter from the Standard Oil Co. of New York (Calcutta) making a rent offer for the triangular plot in front of the Society's building. Resolved to accept the offer; provided the lease do contain a clause safeguarding the Asiatic Society of Bengal from any damage, loss and responsibility from fire risks. The General Secretary to be authorised to negotiate a lease in consultation with and under advice of the Society's Lawyers.

No. 5.

30-9-29.

Progress statement Lease Messrs. Lakhiraj Shewakaram & Co. Resolved: (a) To thank Sir R. N. Mookerjee for his generous offer to arrange for the supervision of the plans for and the operation of the erection of the building by Messrs. Lakhiraj Shewakaram & Co., free of cost to the Society, and to accept the offer.

(b) To authorise the General Secretary to arrange with Mr. Lakhiraj to obtain in permanent ownership either through him or direct from the Calcutta Corporation the narrow strip of ground straightening the alignment in front of the plot of land to be leased out to Messrs. Lakhiraj Shewakaram & Co., at cost price, if judged desirable and after consultation with the Society's Lawyers.

(c) Record the remainder of the communication.
No. 11 (1).

30-9-29.

Report Lease situation to Messrs. Lakhiraj Shewakaram & Co. Resolved that the action of the General Secretary in signing the lease on behalf of the Council of the Society be confirmed.

No. 3.

28-10-29.

Report progress negotiation Lease to Messrs. The Standard Oil Co. of New York. Record. Draft lease to be approved on behalf of the Council by Mr. Justice B. B. Ghose, after which the General Secretary is authorised to sign the lease on behalf of the Council of the Asiatic Society of Bengal with effect from any date from the 1st of December, 1929.

No. 4.

28-10-29.

Lease matters. The Standard Oil Co. of New York. Delete clause concerning guarantee against fire risks from lease. Draft lease to be revised and settled on behalf of the A.S.B. by Mr. B. B. Ghose in consultation with the General Secretary.

No. 12.

25-11-29.

LECTURES—

Public Lectures, Winter 1929-30. General Secretary to arrange.

No. 7.

28-10-29.

Public Lectures, Winter Session, 1929-30. General Secretary to arrange.

No. 11.

16-12-29.

LIBRARY—

Library Committee No. 2 of 25-2-29. Report by the President concerning the willingness of the Calcutta Historical Society to supply a complete set of "Bengal Past and Present". Recommendation: The A.S.B. to join the Society as a life member for a fee of Rs. 100 and to obtain a complete set of "Bengal Past and Present" to date for a payment of Rs. 100. Accepted by Council.

No. 9.

25-2-29.

Modification of the Regulations. *Library Regulations.*

No. 4, last words, for "Honorary Librarian", read "General Secretary".

„ 10, last words, *id.*

„ 21, lines 2 and 4—for "Assistant Secretary", read "General Secretary".

Strike out last sentence from "Manuscripts" to "Officer-in-charge". Order: Emendations accepted.

No. 3.

29-7-29.

Letter from Prof. U. N. Ghosal with reference to recent Library purchases. The Library Secretary to be requested kindly to reply to Prof. U. N. Ghosal.

No. 2.

27-5-29.

Encyclopædia Britannica. Purchase the new revised edition for the Library.

No. 11.

30-9-29.

Letter from the Government of Bengal, Department of Education, declining the request for a recurring grant in aid of the Society's Library. Record. General Secretary's suggestions approved.

No. 4.

30-9-29.

Donation from Sir R. N. Mookerjee for procuring the new edition of the Encyclopædia Britannica. Accept with thanks to the donor.
No. 2. 28-10-29.

LIBRARY ENDOWMENT FUND—

Finance Committee No. 4 (c) of 26-1-29. Mr. W. K. Dods' donation to the Library Endowment Fund, its investment. Also Mr. Law's and Sir David Ezra's donations. Recommendation: Invest to a total amount of Rs. 3,000 face value $3\frac{1}{2}\%$ Govt. Paper, balance of cash needed to be advanced by the Society. Accepted by Council.
No. 15. 28-1-29.

Donations from Messrs. W. K. Dods, Gour Churn Law and Sir David Ezra to the Library Endowment Fund of the Society. Vote of thanks to be conveyed to the donors.
No. 6. 28-1-29.

Finance Committee No. 4 (2) of 20-2-29. Safe custody endorsement of $3\frac{1}{2}\%$ G.P. Notes of 1854-55 to the Face Value of Rs. 1,000 for the Permanent Library Endowment Fund of the Society. Recommendation: Resolved to recommend to Council to authorise the Treasurer to endorse $3\frac{1}{2}\%$ G.P. Note No. 234698 for Rs. 1,000, Face Value, to the Imperial Bank of India, Park Street Branch, Calcutta, for safe custody. Accepted by Council.
No. 8. 25-2-29.

Finance Committee No. 4 (1) of 20-3-29. Safe custody endorsement of $3\frac{1}{2}\%$ G.P. Notes of 1854-55 to the Face Value of Rs. 3,000 for the Permanent Library Endowment Fund of the Society.

Recommendation: Resolved to recommend to Council to authorise the Treasurer to endorse $3\frac{1}{2}\%$ G.P. Notes of 1854-55 Nos. 235353, 235354, 235355, for Rs. 3,000 Face-Value to the Imperial Bank of India, Park Street Branch, Calcutta, for safe custody. Accepted by Council and further resolved that the Treasurer be authorised accordingly.

No. 10 (a). 25-3-29.

LOAN OF MANUSCRIPTS—

Modification of the Regulations. Manuscript lending regulations.

No. 2, last words, for "Philological Committee", read "Council".
Emendations accepted.

No. 3. 29-7-29.

Application for the loan of a volume of the Tibetan Kanjur from Dr. N. N. Law. Issue under usual bond.

No. 9. 25-11-29.

MANUSCRIPTS—

Report return from leave of Mr. Ivanow and concerning MSS. bought by him for the Society. (a) Purchase the MSS. at prices and cost indicated. (b) Purchase the additional Jewish-Persian MSS. at cost price. (c) Grant full pay for month of leave overstayed (December).

No. 8 (a, b, c). 28-1-29.

The Catalogue of the Society's Arabic MSS. Mr. Ivanow first to finish press-ready copy of the theological portion of the MSS. The Catalogue to incorporate MSS. acquired till the end of 1928. New additions and residuals to be embodied in supplements.

No. 16. 25-2-29.

Mr. Ivanow's Catalogue of Arabic MSS. A panel consisting of the President, Sir C. C. Ghose and Dr. Christie to examine the situation and to make recommendations.

No. 15.

25-3-29.

Recommendations of the Arabic MSS. Catalogue panel. Approved.

No. 2.

29-4-29.

MEMBERSHIP—

Finance Committee No. 4 (b) of 26-1-29. List of members in arrears with subscriptions for four or more quarters. Recommendation: Lists Nos. 1, 2 and 3; apply Rules. Accepted by Council.

No. 15.

28-1-29.

List of members in arrears with subscriptions under Rules 22, 27 and 38. Apply Rules.

No. 19.

28-1-29.

Finance Committee No. 4 of 24-4-29. List of members in arrears with subscription to the Society. Recommendation: Apply Rules. Accepted by Council.

No. 3.

29-4-29.

Removal of names under Rule 38, and report receipt of part payment of subscription (arrears) from Md. Amin Abbasi and Md. Basheer Hosain. The General Secretary reported that Messrs. Md. Amin Abbasi and Md. Basheer Hosain have made in the meantime part payments of arrears. Apply Rules.

No. 7.

27-5-29.

List of names to be removed under Rule 40. Apply Rules. Write to Messrs. Kemp and McCay holding over their cases.

No. 8.

24-6-29.

Lists of Members in arrears with subscription to the Society.

List No. 1—List of members in arrears with subscriptions for 4 or more quarters to whom Circular No. 1 is to be sent; List No. 2—List of members in arrears with subscriptions to whom Circular No. 1 was sent on 13-5-29 and List No. 3—List of members who are in arrears with subscriptions to whom Circular No. 2 was sent on 13-5-29. Apply Rules.

No. 9.

29-7-29.

Report compounding of subscription for Life Membership by Dr. S. W. Kemp, who has been an absent member for about 5 years. Record.

No. 11 (3).

30-9-29.

Removal of names under Rule 40. Apply Rules.

No. 13.

28-10-29.

Lists of Members in arrears with subscriptions for four or more quarters. Apply Rules.

No. 14.

28-10-29.

Report compounding of subscription for Life Membership by Dr. D. McCay, who has been an absent member for about 4 years. Record.

No. 15 (a).

28-10-29.

Correspondence with Mr. Sasadhar Roy. Action approved; if no answer be received, write off as a member.

No. 14.

25-11-29.

Removal of names under Rule 38. Apply Rules. Announce two names as removed under Rule 38.
No. 21. 25-11-29.

Dr. S. L. Mitra, whose name was announced as lapsed in the last Council and Monthly Meetings, has taken up his election. Announce.
No. 26. 25-11-29.

MEMORIAL MEDALS—

Further correspondence from Dr. S. C. Law to the President in connection with the institution of a Zoology Gold Medal. Convey thanks to the donor, accept gift. Rules and conditions of the award to be fixed by a Committee consisting of the President, Treasurer, General Secretary and Col. Sewell in consultation with donor. Suggest that the medal be named after Joy Gobind Law.

No. 9. 28-1-29.

Letter from Sir George Grierson. Record. Invite MM. Haraprasad Shastri to receive the Sir William Jones Medal on Sir George Grierson's behalf

No. 22. 28-1-29.

Further donation from Dr. U. N. Brahmachari to the Sir William Jones Memorial Medal Fund. Resolved to communicate the thanks of Council to the donor.

No. 5. 25-2-29.

Recommendations of the Sub-Committee, Joy Gobind Law Memorial Medal. Adopt.

No. 6. 25-2-29.

Regulations regarding the awards of the various medals of the Society. Resolved that in para (3) of the regulations for all awards the words "at its meeting" be amended to "at a meeting" and the words "of five" and "of four" be amended to "of not less than three".

No. 17. 25-2-29.

Report receipt from Dr. Satya Churn Law of a sum of Rs. 2,350 for the institution of the Joy Gobind Law Memorial Medal Fund. Thanks of the Council to be conveyed to the donor.

No. 4. 25-3-29.

Letter from the Secretary, Brühl Memorial Committee, communicating the final resolution regarding the medal. Hold over.

No. 6. 25-3-29.

Recommendations of the Finance Committee No. 4 (1) of 25-4-29. Safe custody endorsement of 3½% G.P. Note of 1854-55 No. 235851 to the face value of Rs. 3,000 for the Joy Gobind Law Memorial Medal Fund. Resolved to recommend to Council to authorise the Treasurer to endorse 3½% G.P. Note of 1854-55 No. 235851 for Rs. 3,000 Face Value, to the Imperial Bank of India, Park Street Branch, Calcutta, for safe custody. Resolved that the Treasurer be authorised accordingly. Accept.

No. 3 (a). 29-4-29.

Recommendations of the Finance Committee No. 4 (2) of 25-4-29. Safe custody endorsement of 3½% G.P. Note of 1854-55 No. 235843 to the face value of Rs. 1,000 for the Brühl Memorial Medal Fund. Resolved to recommend to Council to authorise the Treasurer to endorse 3½% G.P. Note of 1854-55 No. 235843 for Rs. 1,000 Face Value,

to the Imperial Bank of India, Park Street Branch, Calcutta, for safe custody. Resolved that the Treasurer be authorised accordingly. Accept.

No. 3 (b).

29-4-29.

Appointment Advisory Board for the Barclay Memorial Medal. The following to be invited to constitute the Board : Dr. Hora, Col. Knowles, Dr. Pilgrim, Dr. Agharkar.

No. 6 (a).

28-10-29.

The Joy Gobind Law Memorial Medal. Read a letter from the President suggesting that the Board be constituted as follows : Dr. Hora (*ex-officio*), Col. Knowles, Dr. Bains Prashad, the General Secretary, and the President. Accept Dr. Brahmachari's proposal, with the addition of the name of Dr. Pilgrim.

No. 6 (b).

28-10-29.

Recommendation of the Barclay Memorial Medal Advisory Board regarding the award for 1929. Accept. The medal to be awarded to Mr. Albert Howard.

No. 7.

16-12-29.

Recommendation of the Joy Gobind Law Memorial Medal Advisory Board regarding the award for 1929. Accept. The medal to be awarded to Prof. Max Weber.

No. 8.

18-12-29.

MISCELLANEOUS—

Report H.E. the Viceroy's interest in the Society's affairs. Record.

No. 3.

28-1-29.

Letter from the Government of Bengal asking information regarding the Society for the Royal Commission on National Museums and Galleries in England. Reply approved.

No. 7.

28-1-29.

Celebration 125 years' existence of the Bombay Branch of the Royal Asiatic Society. General Secretary to send a suitable reply and to make such further arrangements as may be found possible.

No. 15 (c).

28-10-29.

Letter regarding the deleterious effect of wood on lead coins from the Director-General of Archaeology in India. Record.

No. 5.

25-11-29.

Loan of the Society's Hall to the Numismatic Society of India for their Annual Meeting on 21st and 22nd December. Approved.

No. 6.

25-11-29.

Appointment of the General Secretary as a co-opted member of the Historical Records Commission, 1929. Record.

No. 9.

16-12-29.

PRESENTATIONS—

Presentation by Lt.-Col. R. N. Chopra, I.M.S., of his work on Anthelmintics. Thanks and congratulations to the donor.

No. 23.

28-1-29.

The General Secretary reported presentation to the Society of two specimens of petrified wood from Chittagong and four Sanskrit MSS. by Pandit Rajani Kanta Sahityacharya, Principal, Sanskrit College, Chittagong. Convey thanks to the donor.

No. 11.

29-7-29.

Removal of names under Rule 38. Apply Rules. Announce two names as removed under Rule 38.

No. 21.

25-11-29.

Dr. S. L. Mitra, whose name was announced as lapsed in the last Council and Monthly Meetings, has taken up his election. Announce.

No. 26.

25-11-29.

MEMORIAL MEDALS—

Further correspondence from Dr. S. C. Law to the President in connection with the institution of a Zoology Gold Medal. Convey thanks to the donor, accept gift. Rules and conditions of the award to be fixed by a Committee consisting of the President, Treasurer, General Secretary and Col. Sewell in consultation with donor. Suggest that the medal be named after Joy Gobind Law.

No. 9.

28-1-29.

Letter from Sir George Grierson. Record. Invite MM. Haraprasad Shastri to receive the Sir William Jones Medal on Sir George Grierson's behalf

No. 22.

28-1-29.

Further donation from Dr. U. N. Brahmachari to the Sir William Jones Memorial Medal Fund. Resolved to communicate the thanks of Council to the donor.

No. 5.

25-2-29.

Recommendations of the Sub-Committee, Joy Gobind Law Memorial Medal. Adopt.

No. 6.

25-2-29.

Regulations regarding the awards of the various medals of the Society. Resolved that in para (3) of the regulations for all awards the words "at its meeting" be amended to "at a meeting" and the words "of five" and "of four" be amended to "of not less than three".

No. 17.

25-2-29.

Report receipt from Dr. Satya Churn Law of a sum of Rs. 2,350 for the institution of the Joy Gobind Law Memorial Medal Fund. Thanks of the Council to be conveyed to the donor.

No. 4.

25-3-29.

Letter from the Secretary, Brühl Memorial Committee, communicating the final resolution regarding the medal. Hold over.

No. 6.

25-3-29.

Recommendations of the Finance Committee No. 4 (1) of 25-4-29. Safe custody endorsement of $3\frac{1}{2}\%$ G.P. Note of 1854-55 No. 235851 to the face value of Rs. 3,000 for the Joy Gobind Law Memorial Medal Fund. Resolved to recommend to Council to authorise the Treasurer to endorse $3\frac{1}{2}\%$ G.P. Note of 1854-55 No. 235851 for Rs. 3,000 Face Value, to the Imperial Bank of India, Park Street Branch, Calcutta, for safe custody. Resolved that the Treasurer be authorised accordingly. Accept.

No. 3 (a).

29-4-29.

Recommendations of the Finance Committee No. 4 (2) of 25-4-29. Safe custody endorsement of $3\frac{1}{2}\%$ G.P. Note of 1854-55 No. 235843 to the face value of Rs. 1,000 for the Brühl Memorial Medal Fund. Resolved to recommend to Council to authorise the Treasurer to endorse $3\frac{1}{2}\%$ G.P. Note of 1854-55 No. 235843 for Rs. 1,000 Face Value,

to the Imperial Bank of India, Park Street Branch, Calcutta, for safe custody. Resolved that the Treasurer be authorised accordingly. Accept.

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29-1-29.

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The Joy Gobind Law Memorial Medal. Read a letter from the President suggesting that the Board be constituted as follows: Dr. Hora (*ex-officio*), Col. Knowles, Dr. Bains Prashad, the General Secretary, and the President. Accept Dr. Brahmachari's proposal, with the addition of the name of Dr. Pilgrim.

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Recommendation of the Barclay Memorial Medal Advisory Board regarding the award for 1929. Accept. The medal to be awarded to Mr. Albert Howard.

No. 7.

16-12-29.

Recommendation of the Joy Gobind Law Memorial Medal Advisory Board regarding the award for 1929. Accept. The medal to be awarded to Prof. Max Weber.

No. 8.

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MISCELLANEOUS—

Report H.E. the Viceroy's interest in the Society's affairs. Record.
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Letter from the Government of Bengal asking information regarding the Society for the Royal Commission on National Museums and Galleries in England. Reply approved.

No. 7.

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Celebration 125 years' existence of the Bombay Branch of the Royal Asiatic Society. General Secretary to send a suitable reply and to make such further arrangements as may be found possible.

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Letter regarding the deleterious effect of wood on lead coins from the Director-General of Archaeology in India. Record.

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25-11-29.

Loan of the Society's Hall to the Numismatic Society of India for their Annual Meeting on 21st and 22nd December. Approved.

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PRESENTATIONS—

Presentation by Lt.-Col. R. N. Chopra, I.M.S., of his work on Anthelmintics. Thanks and congratulations to the donor.

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The General Secretary reported presentation to the Society of two specimens of petrified wood from Chittagong and four Sanskrit MSS. by Pandit Rajani Kanta Sahityacharya, Principal, Sanskrit College, Chittagong. Convey thanks to the donor.

No. 11.

29-7-29.

PUBLICATIONS—

Modification of the Regulations. Regulations regarding submission of papers.

No. 4, lines 5 and 6—for “Editor of the Journal and Proceedings”, read “the President, the General Secretary, the Treasurer and the Sectional Secretaries”.

No. 7—Delete.

Emendations accepted.

No. 3.

29-7-29.

Publication Committee No. 4 of 26-8-29. Letter from Prof. Tucci, dated 26-8-29, offering under certain conditions for publication in the Journal a paper on, and edition of, a newly discovered fragment of Vasubandhu. Recommendation: General Secretary to reply in terms as drafted by Col. Barwell. Accepted by Council.

No. 5.

26-8-29.

Remarks from scholars abroad on the recent articles of Sir J. C. Coyajee, published in the Society's Journal. Record with an expression of satisfaction.

No. 2.

25-11-29.

Publication Committee No. 3 of 25-11-29. Paper by H. E. Stapleton on “A find of 182 silver coins of Kings of the Husaini and Suri Dynasties from Raipara, Thana Dohar, Dist. Dacca”. Recommendation: Read and publish in Journal. In the first instance to be forwarded to the Numismatic Society of India with a recommendation that the paper should be included in the Numismatic Supplement. Accepted by Council.

No. 19.

25-11-29.

Proposal from the Political Agent, Manipur State, regarding the publication by the Society, on behalf of the Assam Government, a monograph on the Archaic Meitei language. Accept in principle. The Assam Government to pay for the reproduction of the plates and half the costs of the letter-press, as well as costs of extra copies required. Details to be settled by the General Secretary. The arrangement for the publication on the Thado Kukis to be followed as a model.

No. 10.

16-12-29.

RECEPTION—

Report informal reception to Sir Malcolm Watson in the Society's Rooms on Wednesday, 20th February, at 6 p.m. Record.

No. 4.

25-2-29.

REPRESENTATION—

Complimentary letter to the Bombay Branch of the Royal Asiatic Society. Record.

No. 1.

25-11-29.

REQUESTS—

Request from Rao Bahadur L. K. Anantakrishna Iyer for permission to reprint selected Anthropological passages from the Society's Journal. Sanction after approval of previously submitted list of extracts proposed to be reprinted.

No. 11.

28-1-29.

Request use of the Society's Lecture Hall by the Mining and Geological Institute of India. Action approved.

No. 1.

24-6-29.

Request permission to reproduce certain drawings from Hamilton Buchanan's Manuscripts by the Director, Zoological Survey of India. Request to be granted. Dr. Hora to be requested to take responsibility for safe custody and preservation of the MSS. Usual acknowledgments to be made. A few extra copies of the published work to be requested for the use of the Society.

No. 2.

24-6-29.

Request for the use of the Society's Hall for a lecture by Dr. C. A. Bentley on 17th December, under the auspices of the Bengal Physical Education Association. Approved.

No. 7.

25-11-29.

Request from Mr. H. E. Stapleton to be granted the loan and the use of certain blocks of illustrations in previous volumes of the Journal. Grant on usual conditions.

No. 25.

25-11-29.

Request from the Mining and Geological Institute of India for the use of the Society's Hall for their Annual Meeting on Friday, the 17th January, 1930. Grant.

No. 6.

18-12-29.

RULES AND REGULATIONS—

Regulations regarding the awards of the various medals of the Society. Resolved that in para (3) of the regulations for all awards the words "at its meeting" be amended to "at a meeting" and the words "of five" and "of four" be amended to "of not less than three".

No. 17.

25-2-29.

Modification of the Regulations.

Library Regulations.

No. 4, last words, for "Honorary Librarian," read "General Secretary".

No. 10, last words, *id.*

„ 21, lines 2 and 4—for "Assistant Secretary", read "General Secretary".

Strike out last sentence from "Manuscripts" to "Officer-in-charge".

Manuscript Lending Regulations.

No. 2, last words, for "Philological Committee", read "Council".

Regulations regarding Submission of Papers.

No. 4, lines 5 and 6—for "Editor of the Journal and Proceedings", read, "the President, the General Secretary, the Treasurer and the Sectional Secretaries".

No. 7—Delete.

Sub-section B., Bibliotheca Indica.

No. 1, for "Philological Secretary", read "General Secretary".

„ 2, for "Philological Secretary to consult", read "General Secretary shall consult the Philological Secretary, and shall further consult".

No. 3, line 2, for "to be", read "shall be".

„ 5, line 1, for "to be", read "shall be".

„ 5, line 3, for "Philological Secretary" read "General Secretary".

Regulations Consideration Annual Statement Accounts.

No. 1, line 5, for "Honorary Secretary", read "General Secretary".
 ,, 3, line 2, *id.*

Transpose present regulations 1 and 2 under sub-section "Bibliotheca Indica". Emendations accepted.

No. 3. 29-7-29.

Report issue of the Revised Rule Book. Issue new Rule Book to all members.

No. 5. 28-10-29.

STAFF—

Finance Committee No. 4 (a) of 26-1-29. Staff increment of salaries. Recommendation: Approve the schedule placed before the meeting. Accepted by Council.

No. 15. 28-1-29.

Finance Committee No. 5 (1) of 26-1-29. Petition from Pandit Aghorenath Bhattacharyya for increase of his salary. Recommendation: Decline. Accepted by Council.

No. 15. 28-1-29.

Report return from leave of Mr. Ivanow and concerning MSS. bought by him for the Society. Grant full pay for month of leave overstayed (December).

No. 8 (c). 28-1-29.

Finance Committee No. 4 (1) of 20-2-29. (1) Application from Maulvi Shah Moinuddin Ahmad, for a loan of Rs. 300 from the Provident Fund. Recommendation: To be granted. Action approved. Accepted by Council.

No. 8. 25-2-29.

Finance Committee No. 4 (b) of 19-6-29. Application from Jamadar for salary for the two months he has been granted sick leave. Recommendation: Refer to Council.

Council order: Leave pay to Jamadar granted as a compassionate grant.

No. 4 (b). 24-6-29.

Application for assistance from Babu Sasadhar Banerjee, an ex-Pandit of the Society. Refund balance standing to his credit in the Provident Fund together with a compassionate gratuity making up a total of Rs. 100.

No. 10. 25-11-29.

Application for increase of pay by Mr. Ivanow. Defer. Dr. Brahmachari, Sir C. C. Ghose, Dr. Christie and Rev. Young to be requested to consider and advise.

No. 23. 25-11-29.

Finance Committee No. 4 (ii) of 11-12-29. Society's contribution to Staff Provident Fund for the year 1929. Recommendation: Pay. Accepted by Council.

No. 13. 16-12-29.

Special Finance Committee No. 1 of 11-12-29. Consideration of Budget estimate for 1930. Also recommended that as a special case Babu S. K. Roy's grade of pay should be changed to one of 75-5-125 from

the present one of 50-3-80, and that he should draw Rs. 85 as his initial pay from the date of his next increment. Passed by Council.

No. 12.

16-12-29.

Special Finance Committee No. 1 of 11-12-29. Consideration of Budget estimate for 1930. Also recommended to fix the annual increments in pay of staff as per schedule. Passed by Council.

No. 12.

16-12-29.

TAXES—

Income Tax. Upon report by the Honorary Treasurer resolved that a deputation consisting of Dr. Christie, Col. Barwell and the Honorary Treasurer should interview the Commissioner of Income Tax, Bengal, in connection with the question of Income Tax on the Society and the filling up of the income tax form.

No. 10.

29-7-29.

Notice from the Calcutta Corporation regarding the enhanced assessment of the Society's property. General Secretary to object immediately on behalf of the Society in the widest possible terms.

No. 13.

25-11-29.

Letters to the Assessor to the Corporation of Calcutta in connection with the enhanced assessment of the Society's premises. Record.

No. 5.

16-12-29.

VISITS—

Report visit to the Society of Mr. and Mrs. D. H. Herbert. Record.

No. 4.

28-1-29.

Letter from Sir D. P. Sarvadhikary enquiring whether the Society can arrange for a visit of a party of Bombay Solicitors. Arrange.

No. 12.

28-1-29.

List of names of some distinguished visitors to the Society during December and January. Record.

No. 3.

25-2-29.

Proposed visit to the Society by the "Public School Empire Tour, 1929". Approved.

No. 8.

25-11-29.

Report visit to the Society of the "Public School Empire Tour" on the 7th December. Record.

No. 3.

16-12-29.

Regulations Consideration Annual Statement Accounts.

No. 1, line 5, for "Honorary Secretary", read "General Secretary".
 ,, 3, line 2, *id.*

Transpose present regulations 1 and 2 under sub-section "Bibliotheca Indica". Emendations accepted.

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No. 3.

16-12-29.

**List of
Patrons,
Officers, Council Members, Members,
Fellows and Medallists
of the
Asiatic Society of Bengal,
On the 31st December, 1929.**

PATRONS OF THE ASIATIC SOCIETY OF BENGAL.

1926	..	..	H.E. Baron Irwin, of Kirby-under-Dale, G.M.S.I., G.M.I.E., Viceroy and Governor-General of India.
1927	..	..	H.E. Colonel Sir Francis Stanley Jackson, P.C., G.C.I.E., Governor of Bengal.
<hr/>			
1910-1916	..	..	Lord Hardinge of Penshurst, K.G., P.C., G.C.B., G.C.M.G., G.C.S.I., G.C.I.E., K.C.M.G., G.C.V.O., K.C.V.O., C.B., C.V.O., I.S.O.
1916-1921	..	..	Lord Chelmsford, P.C., K.C.M.G., G.C.M.G., G.C.S.I., G.C.I.E., G.B.E.
1917-1922	..	..	Marquess of Zetland, P.C., G.C.S.I., G.C.I.E.
1921-1926	..	..	Earl of Reading, G.C.B., P.C., G.C.V.O., K.C.V.O., G.B.E.
1922-1927	..	..	Earl of Lytton, P.C., G.C.I.E.

OFFICERS AND MEMBERS OF COUNCIL OF THE
ASIATIC SOCIETY OF BENGAL
DURING THE YEAR 1929.

Elections Annual Meeting.

President.

Rai Upendra Nath Brahmachari, Bahadur, M.A., M.D., Ph.D., F.A.S.B.

Vice-Presidents.

W. A. K. Christie, Esq., B.Sc., Ph.D., M.Inst.M.M., F.A.S.B.

Sir R. N. Mookerjee, K.C.I.E., K.C.V.O.

Sir E. H. Pascoe, Kt., M.A., Sc.D., D.Sc., F.G.S., F.A.S.B.

The Hon'ble Mr. Justice C. C. Ghose, Kt., Barrister-at-Law.

Secretaries and Treasurer.

General Secretary :—Johan van Manen, Esq., F.A.S.B.

Treasurer :—Baini Prashad, Esq., D.Sc., F.R.S.E., F.A.S.B.

Philological Secretary :—Mahamahopādhyāya Haraprasad Shāstrī, C.I.E., M.A., D.Litt., F.A.S.B.

Joint Philological Secretary :—Shamsu'l 'Ulamā Mawlawī M. Hidāyat Hosain, Khan Bahadur, Ph.D., F.A.S.B.

Natural History Secretaries { Biology :—Lt.-Col. R. B. S. Sewell, M.A., M.R.C.S., L.R.C.P., F.L.S., F.Z.S., I.M.S., F.A.S.B.
Physical Science :—Sir C. V. Raman, Kt., M.A., D.Sc., F.R.S., F.A.S.B.

Anthropological Secretary :—Rev. P. O. Bodding, M.A. (Christ.), F.A.S.B.

Medical Secretary :—Lt.-Col. R. Knowles, B.A., M.R.C.S., L.R.C.P., I.M.S., F.A.S.B.

Library Secretary :—Lt.-Col. N. F. Barwell, M.C., M.A., Barrister-at-Law.

Other Members of Council.

Suniti Kumar Chatterji, M.A., D.Lit. (London).

B. De., Esq., M.A., I.C.S. (retired).

H. E. Stapleton, Esq., M.A., B.Sc., I.E.S., F.A.S.B.

Rev. A. Willifer Young.

The Hon'ble Mr. Justice B. B. Ghose, M.A., B.L.

Sir J. C. Coyajee, Kt., B.A. (Cantab.), LL.B., I.E.S.

APPOINTMENTS, TRANSFERS, ETC., DURING THE YEAR.

Col. Sewell, Nat. History Secretary (Biology), resigned in March, and was replaced by Dr. Hora.

Sir C. V. Raman was absent from India from July to the latter part of December.

Mr. Johan van Manen (Acting Treasurer) from 8th to 20th July, from 26th October to 25th November and from the 28th December till the end of the year.

**OFFICERS AND MEMBERS OF COUNCIL OF THE
ASIATIC SOCIETY OF BENGAL
ELECTED FOR THE YEAR 1930.**

President.

Lt.-Col. R. B. Seymour Sewell, M.A., M.R.C.S., L.R.C.P.,
Sc.D. (Cantab.), F.L.S., F.Z.S., I.M.S., F.A.S.B.

Vice-Presidents.

Rai Upendra Nath Brahmachari, Bahadur, M.A., M.D., Ph.D.,
F.A.S.B.
H. E. Stapleton, Esq., M.A., B.Sc., I.E.S., F.A.S.B.
B. De, Esq., M.A., I.C.S. (retired).
L. L. Fermor, Esq., O.B.E., D.Sc., A.R.S.M., F.G.S.,
M.Inst.M.M., F.A.S.B.

Secretaries and Treasurer.

General Secretary :—Johan van Manen, Esq., C.I.E., F.A.S.B.
Treasurer :—K. C. Mahindra, Esq., B.A. (Cantab.).
Philological Secretary :—Mahāmahopādhyāya Haraprasad
Shāstri, C.I.E., M.A., D.Litt., F.A.S.B.
Joint Philological Secretary :—Shamsu'l 'Ulamā Mawlawi
M. Hidāyat Hosain, Khan Bahadur, Ph.D., F.A.S.B.
Natural History Secretaries { Biology :—S. L. Hora, Esq., D.Sc. (Punjab),
D.Sc. (Edinburgh), F.R.S.E.
Physical Science :—W. A. Jenkins, Esq.,
D.Sc. (Sheffield), I.E.S.
Anthropological Secretary :—B. S. Guha, Esq., M.A., Ph.D.
(Harvard).
Medical Secretary :—Lt.-Col. R. Knowles, B.A. (Cantab.),
M.R.C.S., L.R.C.P., I.M.S., F.A.S.B.
Library Secretary :—Lt.-Col. N. F. Barwell, M.C., M.A.,
Barrister-at-Law.

Other Members of Council.

Baini Prashad, Esq., D.Sc., F.R.S.E., F.Z.S., F.A.S.B.
Rev. A. Willifer Young.
The Hon'ble Mr. Justice B. B. Ghose, M.A., B.L.
Sir J. C. Coyajee, Kt., B.A. (Cantab.), LL.B., I.E.S.
Jas. Insch, Esq.
K. C. De, Esq., C.I.E., B.A., I.C.S. (retired).

ORDINARY MEMBERS.

R=Resident. N=Non-Resident. F=Foreign. A=Absent. L=Life.

An Asterisk is prefixed to names of Ordinary Fellows of the Society.

Date of Election.		
6-5-25	R	Abbasi, MOHAMMAD AMIN , <i>Maulavi, Assistant Superintendent.</i> Hooghli Madrassah, Hooghli.
5-4-22	R	Abdul Ali, ABUL FAIZ MUHAMMAD , M.A., M.R.A.S., F.R.S.L., F.R.G.S., F.R.H.S. 3, Turner Street, Calcutta.
7-3-27	R	Abdul Kadir, A. F. M., M.A. (ALLAHABAD), MAULVIE FAZIL (PUNJAB), MADRASSAH FINAL (CALCUTTA), <i>Professor, Islamia College.</i> Wellesley Street, Calcutta.
2-11-25	N	Acharya, PARAMANANDA , B.S.C., <i>Archeological Scholar.</i> Mayurbhanj State, Baripada.
2-3-21	R	Acton, HUGH WILLIAM , M.R.C.S., L.R.C.P., LT.-COL., I.M.S. School of Tropical Medicine and Hygiene, Central Avenue, Calcutta.
7-12-25	N	Afzal, SYED MOHAMAD, KHAN BAHADUR , <i>Offg. Civil Surgeon, Bihar and Orissa Medical Service.</i> Civil Surgeon, Daltonganj.
4-3-29	R	Agate, PURUSHOTTAM NARAYAN , B.S.C., <i>Engineer.</i> 5, Council House Street, Calcutta.
2-3-21	R	Agharkar, SHANKAR PURUSHOTTAM , M.A., PH.D., F.L.S., <i>Professor of Botany, University College of Science.</i> 35, Ballygunge Circular Road, Calcutta.
4-3-29	R	Ahmad, DABIRUDDIN, HADJI , CAPTAIN, L.M.S., A.I.R.O., <i>Teacher of Anatomy, Campbell Medical School.</i> 21-2-C, Haris Mukherjee Road, Bhawanipore, Calcutta.
6-6-17	N	Aiyangar, K. V. RANGASWAMI, RAO BAHADUR , M.A., <i>Director of Public Instruction, Travancore.</i> Trivandrum, Travancore.
6-12-26	N	Aiyangar, S. KRISHNASWAMI , M.A., PH.D., M.R.A.S., F.R.HIST.S., <i>Professor, University of Madras.</i> "Sripadam", 143, Brodies Road, Mylapore, Madras, S.
1-12-20	N	Akbar Khan, THE HON'BLE MAJOR NAWAB MOHAMMED , C.I.E., I.A., <i>Khan of Hoti.</i> Hoti, N.-W.F.P.
6-5-29	R	Aken, CAREL EMANUEL VAN , <i>Manager, Java Bengal Line, Vice-Consul for the Netherlands.</i> c/o Messrs. Java Bengal Line, Clive Buildings, Calcutta.
4-4-23	R	Aiker, A., Merchant. 4, Bankshall Street, Calcutta.
3-7-12	N	Andrews, EGBERT ARTHUR , B.A. Tocklai Experimental Station, Cinnamara, Jorhat, Assam.
1-4-29	R	Asadullah, K. M., B.A., Librarian. Imperial Library, Calcutta.
5-11-24	R	Asaduzzaman, KHAN BAHADUR. 42, Beniapukur Road, Calcutta.

Date of Election.		
4-4-17	N	Awati, P. R., M.A., <i>Professor of Zoology.</i> Royal Institute of Science, Bombay.
3-3-14	L	Bacot, J., Boulevard Saint-Antoine, 61, Versailles, Seine-et-Oise, France.
1-11-26	R	Bagchi, PROBODH CHANDRA, DR.-ES-LETTRES (PARIS), <i>Member of the A.S. of Paris; Lecturer, Calcutta University.</i> 9, Rustomjee Street, Ballygunge, Calcutta.
1-3-26	R	Bagnall, JOHN FREDERICK, <i>Consulting Engineer.</i> 6, Wood Street, Calcutta.
2-4-24	N	Bahl, K. N., <i>Professor of Zoology, Lucknow University.</i> Badshabagh, Lucknow.
5-11-24	N	Baidil, A. MANNAN, <i>Assistant Superintendent, Dormitory.</i> Patna College, Bankipur.
7-3-27	N	Bake, A. A., <i>Doctorandus Or. Lit.</i> P.O. Santiniketan.
2-4-19	R	Bal, SURENDRA NATH, M.Sc., F.L.S., <i>Curator, Industrial Section, Indian Museum.</i> 1, Sudder Street, Calcutta.
1-4-25	R	Banerjee, ABHAYA CHARAN, M.A., <i>Deputy Chief Engineer, Telegraphs.</i> 29A, Ballygunge Circular Road, Calcutta.
7-1-25	R	Banerjee, M. N., C.I.E., B.A., M.R.C.S., L.S.A., <i>Ex-Principal, Carmichael Medical College; Member of the Syndicate, Calcutta University.</i> 32, Theatre Road, Calcutta.
6-2-18	R	Banerjee, NARENDRA NATH, M.I.P.O.E.E., A.M.I.E., <i>Divisional Engineer, Telegraphs.</i> 42/1, Ritchie Road, Ballygunge, Calcutta.
5-4-22	N	Banerjee, SASADHAR, B.A., B.ED., <i>Head Master, Gait H.E. School.</i> Aurangabad, Gaya.
6-12-26	R	Banerjee, S. N., <i>Barrister-at-Law,</i> P-307, New Circular Road, Calcutta.
2-4-28	R	Banerjee, SRIKUMAR, <i>Professor of English, Presidency College.</i> P-72, Saheb Bagan, P.O. Kalighat, Calcutta.
1-3-26	R	Banerjee, WOOMESE CHANDRA, <i>Colliery Proprietor and Merchant.</i> 7, Swallow Lane, Calcutta.
1-7-29	N	Banerji, BIJAN BEHARI, M.Sc. (ALB.), PH.D. (LOND.), F.P.S., A.INST. P., <i>Lecturer in charge of Department of Physics and Mathematics.</i> Indian School of Mines, Dhanbad.
1-3-05	R	Banerji, MURALIDHAR. Sanskrit College, Calcutta.
2-7-07	N	Banerji, RAKHAL DAS, M.A. Hindu University, Benares.
5-3-24	R	Bannerjee, P. N., M.A. (CANTAB.), A.M.I.E., F.C.U., <i>Civil Engineer.</i> 12, Mission Row, Calcutta.
6-5-25	R	Baral, GOKUL CHANDRA, <i>Zemindar, Municipal Councillor and Honorary Presidency Magistrate.</i> 3, Hidaram Banerjee's Lane, Calcutta.
1-11-26	N	Barhut, THAKUR KISHORESINGH JI, <i>State Historian of Patiala Govt.</i> History and Research Department, Patiala.
4-5-21	A	Barnardo, F. A. F., C.B.M., C.I.E., M.D., F.R.C.S., F.R.C.E., LT.-COL., I.M.S. Civil Surgeon, Hughli.
7-12-21	R	Barua, B. M., M.A., D.LITT., <i>Lecturer, Calcutta University.</i> Chandernagore, E. I. Ry.
3-12-23	R	Barwell, N. F., LT.-COL. (RETD.), M.C., M.A., <i>Bar-at-Law.</i> First Floor, 10, Middleton Street, Calcutta (and) Aylmer-ton House, Aylmerton, Norfolk, England.
7-5-28	R	Basak, SARAT CHANDRA, M.A., D.L., <i>Advocate, High Court.</i> 24, Ashutosh Mukherjee, Road, Calcutta.
4-3-29	R	Basu, BEJOY K., M.A., B.L., <i>Mayor of Calcutta.</i> 50, Goaltule Road, Bhawanipore, Calcutta.

Alphabetical List of Ordinary Members.

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Date of Election.		
3-12-24	R	Basu, JATINDRA NATH, M.A., M.L.C., <i>Solicitor</i> . 14, Baloram Ghose Street, Calcutta.
1-3-26	R	Basu, NARENDRA KUMAR, <i>Advocate, High Court</i> . 12, Ashu Biswas Road, Bhawanipore, Calcutta.
2-1-28	R	Basu, NARENDRA MOHUN, M.A., <i>Professor of Physiology</i> . Presidency College, Calcutta.
7-5-28	R	Basu, NARENDRANATH, L.M.S., <i>Professor of Obstetrics and Gynaecology, Carmichael Medical College</i> . 7, Raja Bagan Street, Calcutta.
7-1-29	R	Basu, SARAT CHANDRA, M.L.C., <i>Advocate</i> . 143, Dhurumtollah Street, Calcutta.
6-2-28	R	Basu, SUDEHIR KUMAR, B.A. 24, Tarak Chatterjee's Lane, Calcutta.
6-5-25	N	Batra, HARGOBIND LAL, M.C., MAJOR, I.M.S. Civil Surgeon, Jorhat, Assam.
7-7-09	N	Bazaz, RANGNATH KHEMRAJ, <i>Proprietor, Shri Venkateshwar Press</i> . 7th Khetwadi, Bombay No. 4.
3-7-95	L	Beatson-Bell, REV. SIR NICHOLAS DODD, K.C.S.I., K.C.I.E. Edgecliffe, St. Andrews, Scotland.
4-1-26	F	Becker, JOHN NEILL, <i>Mercantile Assistant</i> . c/o Messrs. Fraser Neabe, Ltd., Singapore, S.S.
7-4-15	N	Belvalkar, SRIPAD KRISHNA, M.A., PH.D., <i>Professor of Sanskrit</i> . Deccan College, Poona.
4-3-25	R	Benthall, E. C., <i>Merchant</i> . 37, Ballygunge Park, Calcutta.
7-4-09	R	*Bentley, CHARLES A., M.B., D.P.H., D.T.M. & H., F.A.S.B. Department of Public Health, Writers' Buildings, Calcutta.
4-11-29	R	Berthoud, GEORGE FELIX, <i>Stock-broker</i> . 7, Hungerford Street, Calcutta.
4-6-28	N	Bhadra, SATYENDRA NATH, RAI BAHADUR, M.A., <i>Principal</i> . Jagannath Intermediate College, Dacca.
3-5-26	N	Bhagwant Rai, MUNSHI RAI, SARDAR, M.P.H.S., <i>Retired District Judge</i> . Bhagwant Ashram, Patiala.
1-8-17	R	*Bhandarkar, DEVADATTA RAMKRISHNA, M.A., PH.D., F.A.S.B. 35, Ballygunge Circular Road, Calcutta.
6-6-23	N	Bhanot, KALI DAS, <i>Late Superintendent, Forests, Jubbal State</i> . Mokandpur, Dt. Jullundur.
5-4-26	N	Bhatia, M. L., M.Sc., <i>Lecturer in Zoology</i> . Lucknow University, Lucknow.
4-3-25	N	Bhatnagar, JAGMOHAN LAL, M.A., <i>Professor of History</i> . Randhir College, Kapurthala.
2-4-28	R	Bhattacharjee, NIBARAN CHANDRA, M.A., <i>Professor of Physiology, Presidency College</i> . 19, Hindusthan Road, Ballygunge, Calcutta.
7-7-09	R	Bhattacharji, SHIB NATH, M.B. 80, Shambazar Street, Calcutta.
4-11-08	R	Bhattacharya, BISVESVAR, B.A., M.R.A.S., B.C.S. 16, Townshend Road, Bhawanipore, Calcutta.
7-2-27	N	Bhattacharya, D. R., M.Sc., PH.D., D.Sc., F.R.M.S., F.Z.S., <i>Head of the Department of Zoology, Allahabad University</i> . 15, George Town, Allahabad.
1-2-22	N	Bhattacharya, VIDHUSEKHARA, PANDIT, <i>Principal, Vidyabhavana</i> . Visvabharati, Santiniketan, Birbhum.
7-7-24	L	Bhattacharyya, BINOYTOSH, M.A., PH.D., <i>General Editor, Gaekwad's Oriental Series, and Librarian, Oriental Collections, Baroda State</i> . Baroda.
9-6-22	R	Bhattacharyya, SIVAPADA, M.D. School of Tropical Medicine and Hygiene, Central Avenue, Calcutta.

Date of Election.		
4-6-28	N	Bhattachali, NALINI KANTA, M.A., <i>Curator, Dacca Museum.</i> Ramna, Dacca.
4-2-25	N	Bhor, SHYAM CHAND, Accountant. Bhopal Chówk, Bhopal.
5-3-28	R	Biswas, CHARU CHANDRA, M.A., B.L., <i>Advocate, High Court.</i> 58, Puddopukur Road, P.O. Elgin Road, Calcutta.
1-8-23	R	Biswas, KALIPADA, M.A. Royal Botanic Gardens, Sibpur, Howrah.
3-1-27	R	Bivar, HUGH GODFREY STUART, I.C.S. 1, Old Ballygunge Road, Calcutta.
6-12-22	A	Blackett, SIR BASIL PHILLOTT, K.C.B., <i>Finance Member, Government of India.</i> Delhi.
1-2-93	L	*Bodding, REV. P. O., M.A. (CHRIST.), F.A.S.B. Mohul-pahari, Santhal Parganas.
3-7-12	N	Bomford, TREVOR LAWRENCE, M.B., B.S., M.R.C.S., L.R.C.P., LT.-COL., I.M.S. Civil Surgeon, Dacca.
4-3-29	R	Boral, ARUN PROKASH, Merchant and Landholder, 9-1, Sikdarpara Street, Calcutta.
3-7-18	R	Bose, CHARU CHANDRA, B.A., M.B., <i>Professor of Pathology, Carmichael Medical College.</i> 52/2, Mirzapur Street, Calcutta.
7-2-27	R	Bose, DEBENDRA MOHAN, M.A. (CAL.), B.SC. (LOND.), PH.D. (BERLIN), <i>Professor of Physics.</i> 92/3, Upper Circular Road, Calcutta.
6-5-25	R	Bose, H. M., B.A., <i>Bar.-at-Law.</i> 177, Lower Circular Road, Calcutta.
6-3-95	R	*Bose, SIR JAGADIS CHANDRA, KT., C.S.I., C.I.E., F.R.S., M.A., D.SC., F.A.S.B. Bose Institute, 91, Upper Circular Road, Calcutta.
1-4-29	R	Bose, JOGENDRA NATH, Zemindar. 22, Ballygunge Circular Road, Calcutta.
5-4-22	N	Bose, JOGESH CHANDRA, VIDYABINODE, <i>Landholder.</i> Bhagwaupur, Dt. Midnapore.
6-7-25	R	Bose, MANMATHA MOHAN, M.A., <i>Professor, Scottish Churches College.</i> 19, Gokul Mitra Lane, Hatkhola, Calcutta.
5-11-28	N	Bose MULLICK, G. N., M.A., <i>Professor of History.</i> Meerut College, Meerut, U.P.
6-7-10	A	Botham, THE HON'BLE MR. ARTHUR WILLIAM, C.S.I., C.I.E., I.C.S., <i>Vice-President, Assam Executive Council.</i> Shillong.
2-11-25	A	Bradshaw, ERIC JEAN, B.A., B.A.I., F.G.S., <i>Resident Geologist.</i> Yenangyaung, Burma.
6-12-26	R	Brahmachari, BIPIN BIHARI, D.P.H., <i>Asst. Director of Public Health, Bengal.</i> 283, Ballygunge Avenue, Calcutta.
4-1-26	A	Brahmachari, INDU BHUSAN, <i>University Lecturer</i> 110-2, Dhakuria Road, Kalighat, Calcutta.
1-1-08	L	*Brahmachari, UPENDRA NATH, RAI BAHADUR, M.A., PH.D., M.D., F.A.S.B. 82/3, Cornwallis Street, Calcutta.
7-11-27	N	Brahmachary, SARAT CH., RAI BAHADUR, M.A., B.T., <i>Superintendent.</i> Kasba Road, Ballygunge, P.O. Dhakuria, Calcutta.
4-4-27	R	Bridge, REV. PETER GONZALEZ, D.D., <i>Principal, St. Paul's College.</i> 33/1, Amherst Street, Calcutta.
3-7-07	L	*Brown, JOHN COGGIN, O.B.E., D.SC., F.G.S., M.I.M.E., M.INST.M.M., M.I.E., F.A.S.B. Geological Survey of India, Indian Museum, Calcutta.
6-10-09	A	Brown, PERCY, A.R.C.A. Government School of Art, Calcutta.
5-3-24	R	Browne, H., MAJOR, M.B.E., A.R.I.B.A., <i>Architect.</i> Messrs. Martin & Co., 12, Mission Row, Calcutta.

Alphabetical List of Ordinary Members.

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Date of Election.		
2-7-24	F	Browne, REV. L. E., M.A. 21, The Drive, Northampton, England.
6-10-09	L	*Brühl, PAUL JOHANNES, I.S.O., D.SC., F.C.S., F.G.S., F.A.S.B. 2, Convent Road, Bangalore.
8-1-96	N	*Burn, SIR RICHARD, KT., C.I.E., I.C.S., F.A.S.B. Board of Revenue, Allahabad, U.P.
4-3-25	N	Buyers, WILLIAM ALEXANDER, M.I.C.E., Senior Government Inspector of Railways. Bombay.
2-4-13	R	Calder, CHARLES CUMMING, B.SC., F.L.S. Royal Botanic Gardens, Sibpur, Howrah.
2-8-26	R	Calder, NORMAN DOUGLAS, Deputy Traffic Manager, E.B. Ry. 3, Belvedere Park, Alipore, Calcutta.
7-1-29	R	Campbell Forrester, MRS. FLORENCE, Fellow of the Archaeological Society of America. Y.W.C. Association, 134, Corporation Street, Calcutta; 1700, R.I. Avenue, Washington, D.C., U.S.A.
4-11-29	R	Campbell, G. R., Partner, Messrs. Mackinnon Mackenzie, & Co. 16, Strand Road, Calcutta.
7-2-27	R	Captain, DARA MANEKSHAW, Merchant. 1, Corporation Street, Calcutta.
1-9-20	R	Chakladar, HARAN CHANDRA, M.A. 28/4, Srimohan Lane, Kalighat, Calcutta.
4-7-27	R	Chakravarti, CHINTAHARAN, M.A., Hon. Assistant Secretary, Sanskrit Sahitya Parishat. Shambazar, Calcutta.
3-3-09	R	Chakravarti, NILMANI, M.A. 103-A, Kalighat Road, Calcutta.
3-1-27	N	Chakravarty, NIRANJANPRASAD, PH.D. (CANTAB.), Government Epigraphist. Office of the Government Epigraphist, Ootacamund, Nilgiris, S. India.
1-9-20	R	*Chanda, RAMAPRASAD, RAJ BAHADUR, B.A., F.A.S.B. 37A, Police Hospital Road, Calcutta.
3-1-06	L	Chapman, JOHN ALEXANDER. c/o The Imperial Library, Calcutta.
7-5-28	R	Chatterjea, SIR NALINI RANJAN, KT., M.A., B.L., Retired Judge and sometime acting Chief Justice, Calcutta High Court. 91A, Harish Mukerjee Road, Bhawanipore, Calcutta.
7-2-27	R	Chatterjee, ASHOK, B.A. (CAL.), B.A. (CANTAB.), Editor, "Welfare." 91, Upper Circular Road, Calcutta.
27-10-15	F	Chatterjee, SIR ATUL CHANDRA, KT., I.C.S., High Commissioner for India. Withdean, Cavendish Road, Weybridge, Surrey, England.
1-10-20	R	Chatterjee, NIRMAL CHANDRA. 52, Haris Mukerjee Road, Bhawanipore, Calcutta.
4-7-27	R	Chatterjee, PATITPABON, M.A., B.L., Vakil, High Court. 84, Harrison Road, Calcutta.
1-4-29	R	Chatterjee, PHANINDRA MOHUN, Retired District and Sessions Judge. 8, Pataldanga Street, Calcutta.
6-8-28	R	Chatterjee, SUSHIL CHANDRA M.A., Government Research Scholar. Presidency College, Calcutta.
7-5-28	R	Chatterji, KEDAR NATH, B.SC. (LONDON), A.E.C.S. (LONDON). 2-1, Townshend Road, Calcutta.
4-1-26	R	Chatterji, KSHITISH CHANDRA, M.A., Lecturer in Comparative Philology, Calcutta University. 61-A, Ramkanta Bose Street, Baghbazar, Calcutta.
7-6-11	R	Chatterji, KARUNA KUMAR, LT.-COL., I.T.F., M.C., V.H.A.S. 6/1, Wood Street, Calcutta.

Date of Election.		
5-3-24	R	Chatterji , MOHINI MOHAN, M.A., B.L., <i>President, Incorporated Law Society of Calcutta.</i> 33, McLeod Street, Calcutta.
6-8-24	R	Chatterji , SUNITI KUMAR, M.A., D.LIT., <i>Khaira Professor, Calcutta University.</i> 3, Sukias Row, Calcutta.
5-11-24	R	Chattopadhyay , K. P., M.A. (CANTAB.), <i>Education Officer, Corporation of Calcutta.</i> 20, Mayfair, Ballygunge, Calcutta.
2-11-25	N	Chattopadhyaya , KSHETRESA CHANDRA, M.A., <i>Lecturer in Sanskrit.</i> Allahabad University, Allahabad.
2-1-28	N	Chauhe , RAM KUMAR, PANDIT, M.A., L.T. (BENARES), M.A. (CAL.), M.E.A.S. (LOND.), <i>Member, Benares Mathematical Society.</i> Azmatgarh Palace, Benares.
28-9-93	R	* Chaudhuri , B. L., B.A., D.SC. (EDIN.), F.R.S.E., F.L.S. (LOND.), F.A.S.B. 9A, South Road, Entally, Calcutta and Sherpur Town, Mymensingh.
1-4-14	A	Chaudhuri , GOPAL DAS. 32, Beadon Row, Calcutta.
1-2-26	N	Chaudhuri , HARAPRASAD, PH.D., <i>Reader in Botany.</i> Punjab University, Lahore.
4-3-25	R	Chaudhuri , J., B.A. (OXON.), M.A. (CAL.), <i>Barrister-at-Law.</i> 34, Ballygunge Circular Road, Calcutta.
3-8-25	N	Chhibber , H. L., M.SC., F.G.S., F.R.G.S., <i>Asst. Superintendent, Geological Survey of India, Burma Party.</i> 230, Dalhousie Street, Rangoon.
6-12-26	R	Chokhani , SREENARAYAN, <i>Secretary, Shree Hanuman Pustkhalaya.</i> 8, New Ghuseri Road, Salkea, Howrah.
5-12-23	R	Chopra , B. N., D.SC., <i>Asst. Superintendent, Zoological Survey of India.</i> Indian Museum, Calcutta.
1-2-22	R	Chopra , R. N., LT.-COL., I.M.S., <i>Professor of Pharmacology.</i> School of Tropical Medicine and Hygiene, Central Avenue, Calcutta.
5-11-28	R	Chopra , GOPICHAND, <i>Student.</i> 47, Khangraputty, Calcutta.
7-5-28	R	Chowdhury , A. N., B.SC., <i>Zemindar.</i> 42, Hem Chandra Street, Kidderpore, Calcutta.
5-12-27	L	Chowdhury , CHHAJURAM, C.I.E., M.L.C., 21, Belvedere Road, Calcutta.
2-4-28	R	Chowdhury , RAI JATINDRANATH, <i>Zemindar.</i> 36, Russa Road, Tollygunge, Calcutta.
3-7-07	L	* Christie , WILLIAM ALEXANDER KYNOCH, B.SC., PH.D., M.INST.M.M., F.A.S.B. <i>Geological Survey of India, Indian Museum, Calcutta.</i>
3-11-09	N	* Christophers , SAMUEL RICKARD, C.I.E., O.B.E., F.R.S., F.A.S.B., M.B., LT.-COL., I.M.S. <i>Central Research Institute, Kasauli.</i>
1-9-15	R	Cleghorn , MAUDE LINA WEST (MISS), F.L.S., F.E.S. 12, Alipur Road, Calcutta.
2-5-27	R	Clegg , EDWARD LESLIE GILBERT, B.SC., <i>Assistant Superintendent, Geological Survey of India.</i> Indian Museum, Calcutta.
4-11-29	R	Cohen , D. J., M.L.C., <i>Honorary Presidency Magistrate, Councillor, Corporation of Calcutta, Proprietor, Messrs. Moberly & Co.,</i> 6, Mangoe Lane. 11, Camac Street, Calcutta.
2-5-23	A	Collenberg , BARON H. RUDT VON, <i>Consul-General for Germany.</i> 2, Store Road, Calcutta.
1-11-26	R	Collet , ARTHUR LOWE, <i>Solicitor.</i> Messrs. Orr Dignam & Co., 32, Dalhousie Square, Calcutta.
1-12-20	R	Connor , SIR FRANK POWELL, KT., LT.-COL., I.M.S., D.S.O., F.R.C.S., <i>Professor of Surgery, Medical College.</i> 2, Upper Wood Street, Calcutta.

Alphabetical List of Ordinary Members.

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Date of Election.		
3-6-24	R	Cooper, H., <i>Manufacturing Chemist</i> . 18, Convent Road, Calcutta.
4-11-29	R	Cotter, GERALD DE PURCELL, B.A., SC.D., M.INST. M.M., F.G.S., <i>Superintendent, Geological Survey of India</i> . Indian Museum, Calcutta.
3-8-25	R	Coyajee, SIR J. C., KT., B.A. (CANTAB.), LL.B., I.E.S., <i>Professor, Presidency College</i> . 2B, Camac Street, Calcutta.
25-8-87	R	Criper, WILLIAM RISDON, F.C.S., F.I.C., A.R.S.M. Konnagar.
2-11-25	R	Crookshank, HENRY, B.A., B.A.I. (DUBLIN), <i>Assistant Superintendent, Geological Survey of India</i> . Indian Museum, Calcutta.
4-3-25	R	Das, AJIT NATH, M.B.A.S., F.Z.S., <i>Zemindar</i> . 24, South Road, Entally, Calcutta.
6-8-28	N	Das, AYODHYA, <i>Barrister-at-Law</i> . Gorakhpur, U.P.
2-4-24	R	Das, BRAJ MOHAN, M.A. (CAL.), M.SC. (LOND.), <i>Superintendent, Calcutta Research Tannery</i> . 2/1, Kirti Mitter Lane, Calcutta.
5-3-28	R	Das, KEDARNATH, C.I.E., M.D., <i>Principal, Carmichael Medical College</i> . 22, Bethune Row, Calcutta.
2-7-28	R	Das, PROBODH KUMAR, M.A., B.L. P-84, Park Street Extension, Calcutta.
3-12-24	R	Das, SURENDRA NATH, M.B., <i>Medical Practitioner</i> . 67, Nimtala Ghat Street, Calcutta.
4-3-29	R	Das, UPENDRA NATH, B.A., M.B., F.R.C.S. (EDIN.), <i>Teacher of Clinical Surgery, Campbell Medical School</i> . 34, Elgin Road, Calcutta.
1-9-15	R	Das-Gupta, HEM CHANDRA, M.A., F.G.S., <i>Professor, Presidency College</i> . 60, Chakrabere Road, North, Calcutta.
6-9-22	R	Das-Gupta, SURENDRA NATH, M.A., PH.D., <i>Professor of Sanskrit and Philosophy, Presidency College</i> . 104, Bakul Bagan Road, Calcutta.
2-1-28	N	Dastidar, NALINI KANTA RAY, RAI BAHADUR, <i>Zemindar</i> . Sylhet, Assam.
1-3-26	R	Datta, HIRENDRA NATH, M.A., B.L., <i>Solicitor, High Court</i> . 139, Cornwallis Street, Calcutta.
3-6-25	F	Datta, S. K., B.A., M.B., CH.B. (EDIN.). 2, Rue Général Dufour, Geneva, Switzerland.
6-8-24	L	Davies, L. M., MAJOR, <i>Royal Artillery</i> . c/o The Lloyds Bank, King's Branch, 6, Pall Mall, London.
2-8-26	R	De, BRAJENDRANATH, M.A., I.C.S. (RETIRED). 11, Lower Rawdon Street, Calcutta.
2-4-24	R	De, F. L., RAI BAHADUR. 99, Grey Street, Calcutta.
4-3-29	R	De, J. C., MAJOR, I.M.S., <i>Professor of Clinical Medicine, Medical College</i> . 13, Camac Street, Calcutta.
4-2-29	F	de Gasparin, EDITH, <i>Art Student</i> . 51, Rue de Varenne, Paris VIIe.
19-9-95	L	De, KIRAN CHANDRA, C.I.E., B.A., I.C.S., (RETIRED). 21, Camac Street, Calcutta.
7-11-27	R	De, P. C., I.C.S., <i>District and Sessions Judge</i> . Hughli.
7-6-26	R	De, PHANINDRANATH, M.A., B.L., <i>Vakil, High Court</i> . 4, Patuatola Lane, Calcutta.
3-1-27	R	De, SATISH CHANDRA, M.A., B.L., I.E.S. (RETIRED). 11, Ray Street, Elgin Road P.O., Calcutta.
6-6-17	R	Deb, KUMAR HARIT KRISHNA, M.A., <i>Zemindar</i> . 8, Raja Nabokishen Street, Calcutta.
7-9-21	R	Deb, KUMAR PROFULLA KRISHNA, <i>Zemindar</i> . 106/1, Grey Street, Calcutta.

Date of Election.		
5-3-24	R	Chatterji , MOHINI MOHAN, M.A., B.L., <i>President, Incorporated Law Society of Calcutta.</i> 33, McLeod Street, Calcutta.
6-8-24	R	Chatterji , SUNITI KUMAR, M.A., D.LIT., <i>Khaira Professor, Calcutta University.</i> 3, Sukias Row, Calcutta.
5-11-24	R	Chattopadhyay , K. P., M.A. (CANTAB.), <i>Education Officer, Corporation of Calcutta.</i> 20, Mayfair, Ballygunge, Calcutta.
2-11-25	N	Chattopadhyaya , KSHETRESA CHANDRA, M.A., <i>Lecturer in Sanskrit.</i> Allahabad University, Allahabad.
2-1-28	N	Chauhe , RAM KUMAR, PANDIT, M.A., L.T. (BENARES), M.A. (CAL.), M.B.A.S. (LOND.), <i>Member, Benares Mathematical Society.</i> Azmatgarh Palace, Benares.
28-9-93	R	* Chaudhuri , B. L., B.A., D.SC. (EDIN.), F.R.S.E., F.L.S. (LOND.), F.A.S.B. 9A, South Road, Entally, Calcutta and Sherpur Town, Mymensingh.
1-4-14	A	Chaudhuri , GOPAL DAS. 32, Beadon Row, Calcutta.
1-2-26	N	Chaudhuri , HARAPRASAD, PH.D., <i>Reader in Botany.</i> Punjab University, Lahore.
4-3-25	R	Chaudhuri , J., B.A. (OXON.), M.A. (CAL.), <i>Barrister-at-Law.</i> 34, Ballygunge Circular Road, Calcutta.
3-8-25	N	Chhibber , H. L., M.SC., F.G.S., F.R.G.S., <i>Asst. Superintendent, Geological Survey of India, Burma Party.</i> 230, Dalhousie Street, Rangoon.
6-12-26	R	Chokhani , SREENARAYAN, <i>Secretary, Shree Hanuman Pustakalaya.</i> 8, New Ghuseri Road, Salka, Howrah.
5-12-23	R	Chopra , B. N., D.SC., <i>Asst. Superintendent, Zoological Survey of India.</i> Indian Museum, Calcutta.
1-2-22	R	Chopra , R. N., LT.-COL., I.M.S., <i>Professor of Pharmacology.</i> School of Tropical Medicine and Hygiene, Central Avenue, Calcutta.
5-11-28	R	Chopra , GOPICHAND, <i>Student.</i> 47, Khangraputty, Calcutta.
7-5-28	R	Chowdhury , A. N., B.SC., <i>Zemindar.</i> 42, Hem Chandra Street, Kidderpore, Calcutta.
5-12-27	L	Chowdhury , CHHAJURAM, C.I.E., M.L.C., 21, Belvedere Road, Calcutta.
2-4-28	R	Chowdhury , RAI JATINDRANATH, <i>Zemindar.</i> 36, Russa Road, Tollygunge, Calcutta.
3-7-07	L	* Christie , WILLIAM ALEXANDER KYNOCH, B.SC., PH.D., M.INST.M.M., F.A.S.B. <i>Geological Survey of India, Indian Museum, Calcutta.</i>
3-11-09	N	* Christophers , SAMUEL RICKARD, C.I.E., O.B.E., F.R.S., F.A.S.B., M.B., LT.-COL., I.M.S. <i>Central Research Institute, Kasauli.</i>
1-9-15	R	Cleghorn , MAUDE LINA WEST (MISS), F.L.S., F.E.S. 12, Alipur Road, Calcutta.
2-5-27	R	Clegg , EDWARD LESLIE GILBERT, B.SC., <i>Assistant Superintendent, Geological Survey of India.</i> Indian Museum, Calcutta.
4-11-29	R	Cohen , D. J., M.L.C., <i>Honorary Presidency Magistrate, Councillor, Corporation of Calcutta, Proprietor, Messrs. Moberly & Co.,</i> 6, Mangoe Lane. 11, Camac Street, Calcutta.
2-5-23	A	Collenberg , BARON H. RUDT VON, <i>Consul-General for Germany.</i> 2, Store Road, Calcutta.
1-11-26	R	Collet , ARTHUR LOWE, <i>Solicitor.</i> Messrs. Orr Dignam & Co., 32, Dalhousie Square, Calcutta.
1-12-20	R	Connor , SIR FRANK POWELL, KT., LT.-COL., I.M.S., D.S.O., F.R.C.S., <i>Professor of Surgery, Medical College.</i> 2, Upper Wood Street, Calcutta.

Alphabetical List of Ordinary Members.

CXXV

Date of Election.		
3-6-24	R	Cooper, H., <i>Manufacturing Chemist</i> . 18, Convent Road, Calcutta.
4-11-29	R	Cotter, GERALD DE PURCELL, B.A., SC.D., M.INST. M.M., F.G.S., <i>Superintendent, Geological Survey of India</i> . Indian Museum, Calcutta.
3-8-25	R	Coyajee, SIR J. C., KT., B.A. (CANTAB.), LL.B., I.E.S., <i>Professor, Presidency College</i> . 2B, Camac Street, Calcutta.
25-8-87	R	Criper, WILLIAM RISDON, F.C.S., F.I.C., A.R.S.M. Konnagar.
2-11-25	R	Crookshank, HENRY, B.A., B.A.I. (DUBLIN), <i>Assistant Superintendent, Geological Survey of India</i> . Indian Museum, Calcutta.
4-3-25	R	Das, AJIT NATH, M.B.A.S., F.Z.S., <i>Zemindar</i> . 24, South Road, Entally, Calcutta.
6-8-28	N	Das, AYODHYA, <i>Barrister-at-Law</i> . Gorakhpur, U.P.
2-4-24	R	Das, BRAJ MOHAN, M.A. (CAL.), M.SC. (LOND.), <i>Superintendent, Calcutta Research Tannery</i> . 2/1, Kirti Mitter Lane, Calcutta.
5-3-28	R	Das, KEDARNATH, C.I.E., M.D., <i>Principal, Carmichael Medical College</i> . 22, Bethune Row, Calcutta.
2-7-28	R	Das, PROBODH KUMAR, M.A., B.L. P-84, Park Street Extension, Calcutta.
3-12-24	R	Das, SURENDRA NATH, M.B., <i>Medical Practitioner</i> . 67, Nimtala Ghat Street, Calcutta.
4-3-29	R	Das, UPENDRA NATH, B.A., M.B., F.R.C.S. (EDIN.), <i>Teacher of Clinical Surgery, Campbell Medical School</i> . 34, Elgin Road, Calcutta.
1-9-15	R	Das-Gupta, HEM CHANDRA, M.A., F.G.S., <i>Professor, Presidency College</i> . 60, Chakrabere Road, North, Calcutta.
6-9-22	R	Das-Gupta, SURENDRA NATH, M.A., PH.D., <i>Professor of Sanskrit and Philosophy, Presidency College</i> . 104, Bakul Bagan Road, Calcutta.
2-1-28	N	Dastidar, NALINI KANTA RAY, RAI BAHADUR, <i>Zemindar</i> . Sylhet, Assam.
1-3-26	R	Datta, HIRENDRA NATH, M.A., B.L., <i>Solicitor, High Court</i> . 139, Cornwallis Street, Calcutta.
3-6-25	F	Datta, S. K., B.A., M.B., CH.B. (EDIN.). 2, Rue Général Dufour, Geneva, Switzerland.
6-8-24	L	Davies, L. M., MAJOR, <i>Royal Artillery</i> . c/o The Lloyds Bank, King's Branch, 6, Pall Mall, London.
2-8-26	R	De, BRAJENDRANATH, M.A., I.C.S. (RETIRED). 11, Lower Rawdon Street, Calcutta.
2-4-24	R	De, F. L., RAI BAHADUR. 99, Grey Street, Calcutta.
4-3-29	R	De, J. C., MAJOR, I.M.S., <i>Professor of Clinical Medicine, Medical College</i> . 13, Camac Street, Calcutta.
4-2-29	F	de Gasparin, EDITH, <i>Art Student</i> . 51, Rue de Varenne, Paris VIIe.
19-9-95	L	De, KIRAN CHANDRA, C.I.E., B.A., I.C.S., (RETIRED). 21, Camac Street, Calcutta.
7-11-27	R	De, P. C., I.C.S., <i>District and Sessions Judge</i> . Hughli.
7-6-26	R	De, PHANINDRANATH, M.A., B.L., <i>Vakil, High Court</i> . 4, Patuatola Lane, Calcutta.
3-1-27	R	De, SATISH CHANDRA, M.A., B.L., I.E.S. (RETIRED). 11, Ray Street, Elgin Road P.O., Calcutta.
6-6-17	R	Deb, KUMAR HARIT KRISHNA, M.A., <i>Zemindar</i> . 8, Raja Nabokishen Street, Calcutta.
7-9-21	R	Deb, KUMAR PROFULLA KRISHNA, <i>Zemindar</i> . 106/1, Grey Street, Calcutta.

Date of Election.		
4-3-25	R	Deb, RAJA KSHITINDRA, RAI MAHASAI OF BANSBERIA RAJ. 21/E, Rani Sankari Lane, Kalighat, Calcutta.
4-3-29	R	Deb, PASUPATI NATH, <i>Zemindar and Landholder, Honorary Presidency Magistrate.</i> P-16, Chittaranjan Avenue, North, Calcutta.
5-12-27	L	Dechhen, H.H. MAHARANI KUNZANG, <i>Maharani of Sikkim.</i> Gangtok, Sikkim.
7-12-25	R	Derviche-Jones, ARTHUR DANIEL, LT.-COL., D.S.O., M.C., <i>Solicitor.</i> c/o Messrs. Orr Dignam & Co., Standard Buildings, Dalhousie Square, Calcutta.
4-2-29	N	Dev, RAJA RAMCHANDRA, <i>Superintendent.</i> Jagannath Temple, Puri.
4-4-27	R	Dewick, REV. EDWARD CHISHOLM, M.A. (CANTAB.), <i>National Literature Secretary, Y.M.C.A. of India, Burmah and Ceylon.</i> 5, Russell Street, Calcutta.
5-11-28	R	Dey, DEBAKAR, RAI SAHEB, <i>Principal and Senior Professor of Veterinary Medicines, Bengal Veterinary College.</i> Belgachia, Calcutta.
4-5-10	L	Dhavlé, SANKARA BALAJI, I.C.S., <i>District and Sessions Judge.</i> Laheria Sarai, Darbhanga.
7-3-27	F	Dikkers, FREDERIK GERHARD. c/o Koninklijke Weefgoederenfabriek, v/h C. F. Stork and Co., Hengelo (o), Holland.
4-8-20	R	Dikshit, KASHINATH NARAYAN, M.A., <i>Superintendent, Archaeological Survey of India.</i> Indian Museum, Calcutta.
5-1-98	R	Dods, WILLIAM KANE, <i>Agent, Hongkong and Shanghai Banking Corporation.</i> 6, Minto Park, Alipur, Calcutta.
2-7-02	L	Doxey, FREDERICK. 63, Park Street, Calcutta.
6-8-28	R	Drummond, J. G., M.A., I.C.S., J.P., <i>Secretary, Local Self-Government, Government of Bengal.</i> 4, Theatre Road, Calcutta.
1-7-29	R	Dunn, JOHN ALEXANDER, D.S.C., D.I.C., F.G.S., <i>Assistant Superintendent, Geological Survey of India.</i> Indian Museum, Calcutta.
4-2-25	R	Dutt, KIRAN CHANDRA, <i>Zemindar.</i> Laksmi Nibas, 1, Laksmi Dutt Lane, Baghbazar, Calcutta.
7-4-20	R	Dutt, KUMAR KRISHNA. 10, Hastings Street, Calcutta.
2-1-28	N	Dutt, PROMODE CHANDRA, RAI BAHADUR, <i>Pleader, Ex-Minister for Local Self-Government, Assam.</i> Sylhet, Assam.
5-3-28	R	Eberl, OTTO, DR. JUR., <i>Vice-Consul for Germany.</i> 2, Store Road, Ballygunge, Calcutta.
1-2-26	A	Edwards, C. A. HENRY, <i>Deputy Chief Engineer, E. B. Ry.</i> 8, Belvedere Park, Alipore, Calcutta.
4-11-29	R	Edwards, L. BROOKE, <i>Manager in India, The Baldwin Loco. Works of Philadelphia, U.S.A.</i> 5, Dalhousie Square, Calcutta.
6-8-28	F	Elberg, (MRS.) Adeline Adrienne Johanna (née Rudolph). c/o Netherlands Trading Society, Hongkong.
1-11-11	R	Esch, V. J., <i>Architect.</i> Victoria Memorial, Cathedral Avenue, Maidan, Calcutta.
6-2-28	R	Evans, FRANK LUCAS, <i>Insurance Manager, Century Insurance Co.</i> 4, Lyons Range, Calcutta.
6-2-28	L	Ezra, SIR DAVID, KT., F.Z.S. 3, Kyd Street, Calcutta.
2-12-29	R	Fawcus, LOUIS REGINALD, <i>Indian Civil Service.</i> United Service Club, Calcutta.

Date of Election.		
4-3-25	R	Deb, RAJA KSHITINDRA, RAI MAHASAI OF BANSBERIA RAJ. 21/E, Rani Sankari Lane, Kalighat, Calcutta.
4-3-29	R	Deb, PASUPATI NATH, <i>Zemindar and Landholder, Honorary Presidency Magistrate.</i> P-16, Chittaranjan Avenue, North, Calcutta.
5-12-27	L	Dechhen, H.H. MAHARANI KUNZANG, <i>Maharani of Sikkim.</i> Gangtok, Sikkim.
7-12-25	R	Derviche-Jones, ARTHUR DANIEL, LT.-COL., D.S.O., M.C., <i>Solicitor.</i> c/o Messrs. Orr Dignam & Co., Standard Buildings, Dalhousie Square, Calcutta.
4-2-29	N	Dev, RAJA RAMCHANDRA, <i>Superintendent.</i> Jagannath Temple, Puri.
4-4-27	R	Dewick, REV. EDWARD CHISHOLM, M.A. (CANTAB.), <i>National Literature Secretary, Y.M.C.A. of India, Burmah and Ceylon.</i> 5, Russell Street, Calcutta.
5-11-28	R	Dey, DEBAKAR, RAI SAHEB, <i>Principal and Senior Professor of Veterinary Medicines, Bengal Veterinary College.</i> Belgachia, Calcutta.
4-5-10	L	Dhavlé, SANKARA BALAJI, I.C.S., <i>District and Sessions Judge.</i> Laheria Sarai, Darbhanga.
7-3-27	F	Dikkers, FREDERIK GERHARD. c/o Koninklijke Weefgoederenfabriek, v/h C. F. Stork and Co., Hengelo (o), Holland.
4-8-20	R	Dikshit, KASHINATH NARAYAN, M.A., <i>Superintendent, Archaeological Survey of India.</i> Indian Museum, Calcutta.
5-1-98	R	Dods, WILLIAM KANE, <i>Agent, Hongkong and Shanghai Banking Corporation.</i> 6, Minto Park, Alipur, Calcutta.
2-7-02	L	Doxey, FREDERICK. 63, Park Street, Calcutta.
6-8-28	R	Drummond, J. G., M.A., I.C.S., J.P., <i>Secretary, Local Self-Government, Government of Bengal.</i> 4, Theatre Road, Calcutta.
1-7-29	R	Dunn, JOHN ALEXANDER, D.S.C., D.I.C., F.G.S., <i>Assistant Superintendent, Geological Survey of India.</i> Indian Museum, Calcutta.
4-2-25	R	Dutt, KIRAN CHANDRA, <i>Zemindar.</i> Laksmi Nibas, 1, Laksmi Dutt Lane, Baghbazar, Calcutta.
7-4-20	R	Dutt, KUMAR KRISHNA. 10, Hastings Street, Calcutta.
2-1-28	N	Dutt, PROMODE CHANDRA, RAI BAHADUR, <i>Pleader, Ex-Minister for Local Self-Government, Assam.</i> Sylhet, Assam.
5-3-28	R	Eberl, OTTO, DR. JUR., <i>Vice-Consul for Germany.</i> 2, Store Road, Ballygunge, Calcutta.
1-2-26	A	Edwards, C. A. HENRY, <i>Deputy Chief Engineer, E. B. Ry.</i> S, Belvedere Park, Alipore, Calcutta.
4-11-29	R	Edwards, L. BROOKE, <i>Manager in India, The Baldwin Loco. Works of Philadelphia, U.S.A.</i> 5, Dalhousie Square, Calcutta.
6-8-28	F	Elberg, (MRS.) Adeline Adrienne Johanna (née Rudolph). c/o Netherlands Trading Society, Hongkong.
1-11-11	R	Esch, V. J., <i>Architect.</i> Victoria Memorial, Cathedral Avenue, Maidan, Calcutta.
6-2-28	R	Evans, FRANK LUCAS, <i>Insurance Manager, Century Insurance Co.</i> 4, Lyons Range, Calcutta.
6-2-28	L	Ezra, SIR DAVID, KT., F.Z.S. 3, Kyd Street, Calcutta.
2-12-29	R	Fawcus, LOUIS REGINALD, <i>Indian Civil Service.</i> United Service Club, Calcutta.

Alphabetical List of Ordinary Members.

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Date of Election.		
2-5-27	N	Feegrade, E. S., M.D., <i>Indian Medical Department, Special Malaria Officer, Burma.</i> Sir Harcourt Butler Institute of Public Health, 2, Theatre Road, Rangoon.
3-8-04	R	*Fermor, LEWIS LEIGH, O.B.E., A.R.S.M., D.Sc., F.G.S., F.A.S.B. Geological Survey of India, Indian Museum, Calcutta.
31-10-06	N	Finlow, ROBERT STEEL, C.I.E., B.Sc., F.I.C., <i>Director of Agriculture, Bengal.</i> Ramna, Dacca.
2 12-29	R	Fisher, THE REV. BISHOP FREDERICK B., S.T.B., PH.D., D.D., LL.D., F.R.S.S., <i>Bishop, Methodist Episcopal Church.</i> 3, Middleton Street, Calcutta.
7-11-27	R	Fitzgerald, T. J., <i>Manager, U.S. Rubber Export Co.</i> 5, Hastings Street, Calcutta.
4-1-26	R	Fleming, ANDREW, <i>General Manager for the East, Minimax, Ltd.</i> 59, Park Street, Calcutta.
5-11-13	R	Fox, CYRIL S., B.Sc., M.I.M.E., F.G.S. Geological Survey of India, Indian Museum, Calcutta.
7-3-27	N	French, JOSEPH CHARLES, <i>Indian Civil Service.</i> Magistrate and Collector, Murshidabad.
2-4-19	N	Friel, RALPH, I.C.S. Silchar, Assam.
7-3-27	F	Fukushima, NAOSHIRO, <i>Assistant in the Sanskrit Seminary.</i> Imperial University, Tokio, Japan.
5-3-28	R	Fullerton, GEORGE MACFARLAND, B.Sc., <i>Banking.</i> c/o The National City Bank of New York, 4, Clive Street, Calcutta.
4-1-26	N	Gaffar, ABDUL, KHAN SAHEB, <i>Deputy Collector.</i> Midnapur.
5-11-28	R	Galstaun, JOHN CARAFIET, <i>Merchant and Landholder.</i> 234/4, Lower Circular Road, Calcutta.
1-11-26	R	Galstaun, SHANAZAN, M.A., D.M.R.E., M.R.C.S., L.R.C.P., <i>Medical Practitioner, Radiologist, Medical College Hospital.</i> 39, Theatre Road, Calcutta.
7-10-09	R	Gangoly, ORDHENDRA COOMAR, B.A. 12/1, Gangoly Lane, Calcutta.
2-11-25	R	Gee, EDWARD ROWLAND, B.A. (CANTAB.), <i>Asst. Superintendent, Geological Survey of India.</i> Indian Museum, Calcutta.
7-5-28	R	Ghosal, UPENDRA NATH, M.A., PH.D., <i>Professor of History, Presidency College.</i> 12, Badur Bagan Row, Calcutta.
2-7-24	R	Ghose, BEFIN BEHARI, M.A., B.L., <i>Judge, High Court.</i> 11, Dover Lane, Ballygunge, Calcutta.
5-4-26	R	Ghose, BIMAL CHANDRA, <i>Barrister-at-Law.</i> 27/1, Haris Mukherjee Road, Calcutta.
2-4-24	R	Ghose, SIR CHARU CHANDRA, KT., <i>Barrister-at-Law, Judge, High Court.</i> 10, Debendra Ghose Road, Bhawanipore, Calcutta.
1-4-29	R	Ghose, DEB PROSONNO, <i>Zemindar.</i> 75, Beadon Street, Calcutta.
7-1-29	R	Ghose, MOHIM CHANDRA, B.A. (CAL.), M.A. (CANTAB.), <i>Barrister-at-Law (Inner Temple).</i> Indian Civil Service, Bengal Secretariat, Calcutta.
3-12-24	R	Ghose, SUSHIL CHANDRA, B.A., <i>Deputy Magistrate.</i> 1, Sikdarbagan Street, Calcutta.
6-12-26	R	Ghosh, B. K., <i>Barrister-at-Law.</i> 10, Rawdon Street, Calcutta.
7 11-27	R	Ghosh, DEBENDRA NATH, M.B., <i>Medical Practitioner.</i> 1/1, Gour Laha Street, Calcutta.
7-2-27	N	Ghosh, JNANENDRA CHANDRA, D.Sc., <i>Professor of Chemistry.</i> Dacca University, Ramna, Dacca.

Date of Election.		
2-4-24	R	Ghosh, K. , D.T.M., D.P.H. (CANTAB.), L.M.S., <i>Medical Practitioner</i> . 45, Creek Row, Calcutta.
5-12-27	R	Ghosh, KISOR , M.SC., <i>Solicitor</i> . 10, Hastings Street, Calcutta.
6-2-18	L	Ghosh, EKENDRA NATH , M.D., M.SC., F.Z.S., F.R.M.S., <i>Professor of Biology, Medical College</i> . 66, Cornwallis Street, Calcutta.
7-3-27	R	Ghosh, PHANINDRA NATH , M.A., PH.D., SC.D. (PADUA), <i>Sir Rashbehary Ghosh Professor of Applied Physics, University of Calcutta</i> . 92, Upper Circular Road, Calcutta.
5-5-20	R	Ghosh, SUKHENDRA NATH , B.A. (CAL.), B.SC. (GLAS.), M.I.C.E., F.R. SAN. I., M.I.E., <i>Executive Engineer, P.W.D., Central Division, Bengal</i> . 7, Heysham Road, Calcutta.
4-9-12	R	Ghosh, TARAPADA . 14, Paddapukur Street, Kidderpore, Calcutta.
1-2-26	R	Ghuznavi, A. H. , M.L.A., <i>Merchant and Zemindar</i> . 18, Canal Street, Entally, Calcutta.
6-8-28	R	Ghuznavi, ISKANDER S. K. , <i>Zemindar and Member, Advisory Board of Industries, Government of Bengal</i> . 30, Theatre Road, Calcutta, (and) Dilduar, Mymensingh.
1-2-26	R	Ghuznavi, THE HON'BLE HADJI SIR ABDEL KERIM ABU AHMED KHAN , KT., M.L.C., <i>Zemindar of Dilduar</i> . 30, Theatre Road, Calcutta, (and) North House, Dilduar, Mymensingh.
1-4-29	R	Ginwala, SIR PADAMJI , <i>President, Indian Tariff Board</i> . 1, Council House Street, Calcutta.
1-7-29	R	Glass-Hooper, CYRIL TOM , <i>Engineer (Manager for East of Messrs. Carrier Engineering Co., Ltd.)</i> . F-2, Clive Buildings, Calcutta.
4-3-29	R	Goil, D. P. , LT.-COL., I.M.S., M.B., F.R.C.S.E., <i>Civil Surgeon</i> . Principal, Medical College, Calcutta.
5-3-28	R	Gooptu, DWIJENDRA NATH , <i>Medical Practitioner and Landholder</i> . 5, Middleton Street, Calcutta.
7-9-10	N	*Gravelly, FREDERIC HENRY , D.SC., F.A.S.B. Museum House, Egmore, Madras.
3-5-05	F	Graves, HENRY GEORGE , A.R.S.M. 52, Cardington Road, Bedford, England.
5-12-00	L	Grieve, JAMES WYNDHAM ALLEYNE . c/o Messrs. Coutts & Co., 440, Strand, London, W.C. 2.
4-2-25	R	Guha, B. S. , M.A., PH.D. (HARVARD). Indian Museum, Calcutta.
6-12-26	R	Guha, SURENDRANATH, RAI BAHADUR , <i>Senior Government Pleader</i> . 18, Ram Mohan Dutt Road, Bhawanipur, Calcutta.
1-3-26	N	Gupta, DHIRENDRA NATH , MAJOR, I.M.S., <i>Behar and Orissa Medical Service</i> . Assistant Surgeon, Sadar Hospital, Arrah.
7-5-28	R	Gupta, J. N. , M.B.E., C.I.E., I.C.S., <i>Member, Board of Revenue, Government of Bengal</i> . 7, Pretoria Street, Calcutta.
7-3-23	R	Gupta, N. , <i>Barrister-at-Law</i> . Calcutta Club, 241, Lower Circular Road, Calcutta.
5-3-19	N	Gupta, SIVAPRASAD . Seva Upavana, Benares City.
5-4-26	R	Gupta, SURENDRA NATH , <i>Insurance Broker</i> . 101/1, Clive Street, Calcutta.
5-8-15	N	Gurner, CYRIL WALTER , I.C.S. District Magistrate, Mymensingh.
6-3-01	N	Habibur RAHMAN KHAN, Rais . Bhikanpur, District Ali garh.

Alphabetical List of Ordinary Members.

cxxx

Date of Election.		
7-8-07	F	*Haines, HENRY HASELFOOT, C.I.E., F.C.H., F.L.S., F.A.S.B. Glen Ashton, Wimborne, Dorset, England.
2-4-24	R	Haq, MAHFUZ-UL, M.A., <i>Lecturer, Presidency College.</i> 13/1, Collin Lane, Calcutta.
2-4-28	N	Hargopal, PANDIT, <i>Government Jagirdar, Landlord.</i> Turkman Gate, Delhi.
1-5-12	R	Harley, ALEXANDER HAMILTON, M.A., I.E.S., <i>Principal.</i> Islamia College, Calcutta.
2-5-23	A	Harnett, W. L., LT.-COL., I.M.S., M.B., F.R.C.S., <i>Principal.</i> Medical College, Calcutta.
1-2-26	R	Harris, H. G., <i>Director, Messrs. Martin & Harris, Ltd.</i> 8, Waterloo Street, Calcutta.
2-4-28	R	Harris, LAWRENCE ERNEST, <i>Engineer, Manager for India, Messrs. Sulzer Brothers.</i> 11, Clive Street (P.O. Box No. 508), Calcutta.
5-3-28	R	Hawes, GEORGE LAURENCE, M.C., <i>Underwriter.</i> 4, Merlin Park, Ballygunge, Calcutta.
4-4-27	N	Helland, BERNEARD ALVIN, B.A., <i>Augsburg College (U.S.A.), B.D., Augsburg Seminary (U.S.A.), M.A., University of Minnesota (U.S.A.), Missionary-Teacher, under appointment as Principal, Kaerabani Boys' Middle English and Guru Training School.</i> Kaerabani, via Dumka, Santal Parganas.
5-11-19	N	Hemraj, RAJ GURU, PANDIT. Dhokatul, Nepal.
3-12-24	R	Hendry, C. A. JOHN, F.R.G.S., M.I.S.E., A.M.I.M.E., M.I.E M.M.N.I., <i>Consulting Mechanical Engineer, Messrs. Martin & Co.</i> 12, Mission Row, Calcutta.
6-8-28	R	Heron, A. M., D SC. (EDIN.), F.G.S., F.R.G.S., F.R.S.E., <i>Assistant Superintendent, Geological Survey of India.</i> Indian Museum, Calcutta.
7-6-11	R	*Hidayat Hosain, MUHAMMAD, SHAMS-UL-'ULAMĀ, KHAN BAHADUR, PH.D., F.A.S.B. 96/2c, Collin Street, Calcutta.
1-2-26	R	Hingston, H., MAJOR, I.M.S., M.D., <i>Surgeon to H.E. the Governor of Bengal.</i> 5, Wellesley Place, Calcutta.
4-6-28	N	Hobart, ROBERT CHARLES, I.C.S., <i>Collector.</i> Bareilly, U.P.
1-4-25	R	Hobbs, HENRY, <i>Merchant.</i> 4, Esplanade East, Calcutta.
7-3-27	N	Hopkinson, ARTHUR JOHN, I.C.S. Kahalla, Nathiagali, N.-W.F.P.
2-11-21	R	Hora, SUNDER LAL, D.SC., F.Z.S., F.R.S.E. <i>Zoological Survey of India, Indian Museum, Calcutta.</i>
4-3-25	R	Hossain, MUHAMMAD BASHEER, M.A., B.T. 20/B, Harrison Road, Calcutta.
2-7-28	R	Hossain, NAWAB MUSHARRUF, KHAN BAHADUR, M.L.C. 42-A, Hazra Road, Calcutta.
6-6-23	N	*Howard, A., C.I.E., M.A., F.A.S.B., <i>Director, Institute of Plant Industry, and Agricultural Adviser to States in Central India.</i> Indore, C.I.
4-1-26	R	Hubert, OTTO, <i>Chancellor to the German Consulate General.</i> 2, Store Road, Ballygunge, Calcutta.
2-5-27	F	Hürlimann, MARTIN, DR. PHIL. Sihlberg, Zurich 2, Switzerland.
1-2-26	N	Husain, MOHAMMAD AFZAL, M.A., M.SC., I.A.S., <i>Entomologist to the Government of the Punjab.</i> Lyallpur, Punjab.
6-6-23	N	*Hutton, J. H., C.I.E., I.C.S., M.A., D.SC., F.A.S.B., <i>Census Commissioner of India.</i> Chelmsford Club, New Delhi.
7-2-27	N	Imam, ABU MOHAMMAD SYED HASSAN, <i>Zemindar.</i> Hasnain Manzil, Gaya, E.I.R.

Date of Election.		
2-1-28	N	Imam, SYED HASAN, <i>Barrister-at-Law</i> . Hasan Manzil, Patna.
1-2-11	L	Insch, JAMES. c/o Messrs. Duncan Bros. & Co., 101, Clive Street, Calcutta.
5-11-28	R	Ishaque, MOHAMMAD, M.A., B.SC., M.R.A.S., <i>Lecturer, Calcutta University</i> . 6, Hospital Street, P.O. Dhurru-m-tollah, Calcutta.
2-7-24	N	Iyengar, M. O. PARTHASARATHY, M.A., L.T., <i>Professor of Botany</i> . Presidency College, Madras.
4-3-29	N	Iyer, MANDAKOLATORE SUBRAHMANYA. 879, Nagamaram Lane, East Gate, Fort, Tanjore.
5-12-23	R	Jackson, P. S. 14, Old Court House Street, Calcutta.
2-12-29	R	Jacob, JOSEPH, <i>Export Department, Messrs. Andrew Yule & Co.</i> , 8, Clive Row. 19, Loudon Street, Calcutta.
6-6-27	L	Jain, BALDEODAS, <i>Merchant and Banker</i> . 21, Armenian Street, Calcutta.
2-2-21	R	Jain, CHHOTE LAL, M.R.A.S. 25, Central Avenue North, Calcutta.
6-8-28	N	Jaitly, P. L., <i>Electrical Engineer, Merchant</i> . 15, Canning Road, Allahabad.
6-6-27	N	James, FREDERICK ERNEST, O.B.E. United Planters' Association of South India, Mercantile Buildings, First Line Beach, Madras.
2-8-26	R	James, JOHN LANGFORD, <i>Barrister</i> . 2, Short Street, Calcutta.
1-11-26	N	Jameson, THOMAS BLANDFORD, MAJOR, M.C., M.A. (CANTAB.), I.C.S., <i>District and Sessions Judge</i> . Midnapore.
7-5-28	R	Jardine, ALEXANDER, D.SC., M.INST.C.E., M.I.E. (IND.), <i>Director, Messrs. Jessop & Co., Ltd.</i> 93, Clive Street, Calcutta.
4-11-29	R	Jarvis, ROBERT, Y., <i>Consul of the United States of America</i> . 9, Esplanade Mansions, Calcutta.
6-5-25	R	Jatia, SIR ONKAR MULL, KT., O.B.E., <i>Merchant</i> . 2, Rupchand Roy Street, Calcutta.
4-2-29	R	Jenkins, WALTER ALLEN, D.S.O. (SHEFFIELD), I.E.S., M.L.C. United Service Club, Calcutta.
7-2-23	A	Jinavijayaji, MUNI, <i>Principal, Gujerat Puratattva Mandir</i> . Ellisbridge, Ahmedabad.
5-4-26	A	Jones, THORNTON, <i>Solicitor</i> . c/o Messrs. Morgan & Co., 4, Hastings Street, Calcutta.
2-4-24	R	Judah, N. J., M.B., CH.B., F.R.C.S. 2, Hungerford Street, Calcutta.
1-11-11	L	Kamaluddin AHMAD, SHAMS-UL-ULAMĀ, M.A., I.E.S. Krishnagar College, Krishnagar.
5-3-24	R	Kanjilal, M. N., M.A. (CAL.), LL.B. (CANTAB.), <i>Barrister-at-Law</i> . 17, Loudon Street, Calcutta.
6-5-29	N	Kapur, DIWAN RAM CHANDRA, <i>Millowner and Banker</i> . Diwan Balmokund Kapur Lane, Benares City.
5-11-24	R	Kapur, SHAMLAL, <i>Import and Banking</i> . 84, Khengrapatty, Calcutta.
1-2-26	N	Kashyap, SHIV RAM, RAO BAHADUR, B.A., M.S.C., I.E.S., <i>Professor of Botany</i> . Government College, Lahore.
10-6-12	R	Kazim Shirazi, AGA MOHAMMED. 16A, Ahiripukur 1st Lane, Ballygunge, Calcutta.
5-11-28	R	Keable, REV. GEOFFREY, M.A., <i>Lecturer, Bishop's College</i> . 224, Lower Circular Road, Calcutta.

Date of Election.		
4-5-10	L	*Kemp, STANLEY W., B.A., D.SC., F.A.S.B. "Discovery Expedition," 52, Queen Anne Chambers, Dean Farrar Street, London, S.W. 1.
6-2-28	F	Kewal, GANDA SINGH, PH. B.SC., I.O.G.E., F.R.G.S. (LONDON), F.T.S., F.I.A.S.C. (LONDON). Post Box No. 1, Abadan (Persian Gulf).
1-2-26	R	Khaitan, D. P., M.L.C., <i>Attorney-at-Law ; Solicitor and Merchant.</i> 137, Canning Street, Calcutta.
1-2-26	R	Khambata, R. B., M.R.C.S., L.R.C.P., D.P.H., <i>Director of Public Health Laboratory and Professor of Laboratory Practice, School of Tropical Medicine and Hygiene.</i> 2-B, Camac Street, Calcutta.
3-2-15	N	Khan, HAFIZ AHMED ALI, <i>Controller of Household and Officer-in-charge, State-Library.</i> Rampur State, U.P.
2-12-29	N	Khan, MATUR RAHMAN, <i>Landholder and Service Holder.</i> P.O. Lalmohan, Dt. Bakerganj.
6-2-28	N	Khan, MOHD. ABDUR RAHMAN, A.R.C.S., B.S.C., F.P.L., F.O.U., <i>Principal, Osmania University College.</i> Hyderabad, Deccan.
6-5-25	R	Khanna, VINAYEK LAL, M.R.A.S., <i>Merchant.</i> 2/1, Nunda Lal Mallick 2nd Lane, Beadon St. P.O., Calcutta.
2-8-26	R	Khettry, BENIMADHO, <i>Proprietor, Messrs. Gouri Shanker Khettry, Landholders, Bankers & Merchants.</i> 15, Paggiyapatti, Barabazar, Calcutta.
2-11-25	A	Kimura, R. (Ko-Shi), <i>Lecturer, Calcutta University.</i> c/o Rishyo Dai Gaku Osaki Machi, Tokyo, Japan.
7-7-20	R	*Knowles, ROBERT, M.R.C.S., L.R.C.P., B.A. (CANTAB.), F.A.S.B., LT.-COL., I.M.S. 63, Park Street, Calcutta.
6-5-25	A	Koester, HANS, <i>Vice-Consul for Germany.</i> 17/1, Store Road, Ballygunge, Calcutta.
6-5-25	R	Kolah, K. S., <i>Merchant.</i> 8, Dhurrumtollah Street, Calcutta.
1-4-29	R	Kolb, EUGENE HENRY, <i>Engineer, Standard Oil Co of New York.</i> 6, Church Lane, Calcutta.
5-3-23	N	Korke, VISHNU TATYAJI, CAPTAIN, F.R.C.P. (EDIN.). Central Research Institute, Kasauli.
1-3-26	R	Kramrisch, STELLA (MISS), PH.D., <i>Lecturer in Ancient Indian History (Fine Arts), Calcutta University.</i> 35, Ballygunge Circular Road, Calcutta.
5-11-28	R	Krishnan, M. SITARAM, M.A., PH.D., A.R.C.S., D.I.C., <i>Assistant Superintendent, Geological Survey of India.</i> Indian Museum, Calcutta.
2-4-28	R	Kumar, KUMAR KRISHNA, M.A., B.L., <i>Zemindar and Banker.</i> 31 & 31-1, Burtolla Street, Calcutta.
4-11-29	N	Kurup, POKIARATH CHENCHERI KRISHNA, L.M.P., <i>Licentiate of the College of Physicians and Surgeons of Bombay, Medical Officer.</i> Taliparamba P.O., North Malabar (M.P.).
7-3-23	A	Labe, GEORGE THOMAS, M.C., <i>Bengal Pilot Service.</i> United Service Club, Calcutta.
1-4-25	N	Laden La, SONAM WANGFEL, SARDAR BAHADUR, F.R.G.S., <i>Hony. A.D.O. to H.E. the Governor of Bengal, Chief of Police, Lhasa, Tibet.</i> "Yangang Villa", Darjeeling.
3-6-25	N	Lal, BUDH BEHARI, RAI SAHEB, B.A., PH.D., <i>Head Master.</i> 48B, New Mandi, Muzaffarnagar.
6-3-89	L	*La Touche, THOMAS HENRY DIGGES, M.A., F.G.S., F.A.S.B. 230, Hills Road, Cambridge, England.
5-8-14	R	Law, BIMALA CHARAN, M.A., B.L., PH.D., F.R.HIST.S. 43, Kailas Bose Street, Calcutta.

Date of Election.		
1-2-11	R	Law, NARENDRA NATH, M.A., B.L., P.R.S., PH.D. 96, Amherst Street, Calcutta.
1-7-14	R	Law, SATYA CHURN, M.A., B.L., PH.D., F.Z.S., M.B.O.U. 50, Kailas Bose Street, Calcutta.
7-6-26	R	Lemmon, RICHARD DENNIS, <i>Merchant</i> . 8, Waterloo Street, Calcutta.
3-5-11	R	Lomax, C. E., M.A. La Martinière, Calcutta.
4-3-29	R	Lunan, A. G., <i>Partner, Messrs. Bathgate & Co.</i> 19, Old Court House Street, Calcutta.
5-7-26	N	Lyne, HOWARD WILLIAM, I.C.S. Khulna, E.B.R.
2-8-05	L	*McCay, DAVID, LT.-COL., I.M.S., M.D., B.CH., B.A.O., M.R.C.P., F.A.S.B. c/o The Standard Bank of S. Africa, Cradock, Cape Province, S. Africa.
5-11-24	R	MacGregor, A. D., M.B.C., V.S., I.V.S., <i>Principal</i> . Bengal Veterinary College, Belgachia, Calcutta.
1-3-26	R	McKay, JOHN WALLACE, <i>Delegate, Chilean Nitrate Committee (Indian Delegation)</i> . 7, Hare Street, Calcutta.
11-1-93	L	*MacLagan, SIR EDWARD DOUGLAS, K.C.S.I., K.C.I.E., F.A.S.B. 188, West Hill, Putney, London, S.W. 15.
7-1-29	R	MacLean, EVAN VICTOR, <i>Traffic Officer, E. I. Ry.</i> 1, Colvin Court, Howrah.
5-3-24	R	McPherson, JAMES. c/o Messrs. Begg Dunlop & Co., Ltd., 2, Hare Street, Calcutta.
7-6-16	N	Mahajan, SURYA PRASAD. Murarpur, Gaya.
3-3-20	R	Mahalanobis, P. C., M.A., B.SC., I.I.S.S., <i>Professor, Presidency College</i> . 10, Cornwallis Street, Calcutta.
5-12-06	R	Mahalanobis, SUBODH CHANDRA, B.SC. (EDIN.), F.R.S.E., I.E.S., <i>Professor, Presidency College</i> . P-45, New Park Street, Calcutta.
1-3-11	F	Mahtab, SIR BIJAY CHAND, K.C.S.I., I.O.M., MAHARAJA-DHIRAJA BAHADUR OF BURDWAN. 6, Alipur Lane, Calcutta.
6-2-24	R	Mahindra, K. C., B.A. (CANTAB.). Accounts Department, Messrs. Martin & Co., 12, Mission Row, Calcutta.
7-8-18	R	Maitra, JATINDRA NATH, <i>Physician and Surgeon</i> . 68/A, Beadon Street, Calcutta.
4-7-27	R	Maitra, JOGENDRA NATH, M.SC., M.B., <i>Medical Practitioner</i> . 58-A, Colootollah Street, Calcutta.
2-4-28	R	Majumdar, AKHIL RANJAN, M.B., <i>Teacher of Materia Medica, Campbell Medical School</i> . 29/B, Chittaranjan Avenue, Calcutta.
2-8-26	N	Majumdar, DHIRENDRA NATH, M.A., <i>Lecturer in Anthropology</i> . University of Lucknow, Lucknow.
6-2-28	R	Majumdar, GIRIJA PRASANNA, M.SC., B.L., <i>Professor of Botany, Presidency College</i> . Calcutta.
2-6-20	N	Majumdar, NANI GOPAL, M.A. Archaeological Department, Gorton Castle, Simla.
2-2-16	R	Majumdar, NARENDRA KUMAR, M.A., <i>Professor, Calcutta University</i> . 18, Jhamapukur, Mechuabazar, Calcutta.
4-6-13	N	Majumdar, RAMESH CHANDRA, M.A., PH.D., <i>Professor</i> . Dacca University, Ramna, Dacca.
6-2-28	R	Mallik, S. N., C.I.E., M.A., B.L., <i>Formerly Member, India Council, India Office, London</i> . 2, Chandranath Chatterji Street, Calcutta.
7-5-28	R	Mallik, SATYENDRA CHANDRA, M.A., I.C.S., <i>Judge, High Court</i> . 7-3, Burdwan Road, Alipur, Calcutta.

Date of Election.		
6-2-18	L	*Manen, JOHAN VAN, C.I.E., F.A.S.B. 6, Temple Chambers, 6, Old Post Office Street, Calcutta.
5-6-01	F	Mann, HAROLD HART, D.S.C., M.S.C., F.I.C., F.L.S., Woburn Experimental Station, Aspley Guise, Bedfordshire, England.
4-8-20	R	Martin, OSWALD. 12, Mission Row, Calcutta.
5-3-24	R	Martin, T. LESLIE, M.A. (CANTAB.). 12, Mission Row, Calcutta.
4-6-19	N	Matthai, GEORGE, M.A., SC.D. (CANTAB.), F.R.S.E., F.L.S., F.Z.S., I.E.S., <i>Professor of Zoology</i> . Government College, Lahore.
2-12-29	N	Maynard, THE REV. BERTRAM MARTIN (<i>King's College, London</i>), <i>Chaplain</i> . Cawnpore, U.P.
5-12-23	N	Meggitt, F. J., B.S.C., PH.D., F.Z.S., I.E.S., <i>Professor of Biology</i> . University College, Rangoon.
2-1-28	R	Mehta, M. H., <i>Managing Director, M. T. Ltd.</i> 15, Chowringhee Place, Calcutta.
3-3-86	L	Mehta, ROOSTUMJEE DHUNJEEBHAY, C.I.E., J.P., F.R.S.A. 9, Rainey Park, Ballygunge, Calcutta.
5-3-28	N	Melhuish, ROBERT AVELINE, COMMANDER, R.I.M., <i>Surveyor-in-Charge, Marine Survey of India</i> . c/o R. I. M. Dockyard, Bombay.
2-1-28	N	Mello, FROILANO de, COLONEL, <i>Director-General of Medical Services in Portuguese India</i> , <i>Professor of Parasitology</i> . Nova Gôa.
4-2-25	N	Menon, K. RAMUNNI, M.A., <i>Professor of Zoology</i> . Presidency College, Madras.
1-2-26	F	Meston, LORD, K.C.S.I., LL.D. Hurst, Cookenham Dene, Berkshire, England.
5-11-84	N	*Middlemiss, CHARLES STEWART, C.I.E., F.R.S., B.A., F.G.S., F.A.S.B. Srinagar, Kashmir.
3-9-84	R	Miles, WILLIAM HENRY, F.E.S., F.Z.S. 7, King Edward Court, Chowringhee, Calcutta.
1-2-26	N	Mills, JAMES PHILIP, I.C.S., M.A. (OXON), J.P., <i>Deputy Commissioner, Kohima</i> . Naga Hills, Assam.
2-11-25	R	Mirza, M. B., <i>Merchant</i> . 18/2, Dilkusha Street, Calcutta.
5-6-12	N	Misra, CHAMPARAM, B.A., <i>Dy. Director of Industries</i> . Cawnpore, U.P.
5-11-19	N	Misra, PRAMATHA NATH, M.R.A.S., <i>Pleader</i> . Malda.
2-4-28	R	Mitra, DEBENDRA NATH, B.S.C. (LOND.), LL.B., <i>Barrister-at-Law</i> . 51/2, Ramkanto Bose Street, Calcutta.
2-4-24	R	Mitra, J. C., M.A., B.L., <i>Retired Accountant-General</i> , Bengal. 1, Abinash Mitter Lane, Calcutta.
4-3-29	R	Mitra, JAMINI MOHAN, RAI BAHADUR, M.A., <i>Registrar, Co-operative Societies, Bengal</i> . 24, Ray Street, Bhawanipore, Calcutta.
2-4-28	N	Mitra, JOGENDRA NATH, L.M.S., <i>Civil Surgeon</i> . Comilla.
6-6-06	R	Mitra, KUMAR MANMATHA NATH. 34, Shampukur Street, Calcutta.
4-11-29	R	Mitra, MATHURA NATH, B.A., <i>Solicitor</i> . 12-1, Old Post Office Street, Calcutta.
1-7-29	N	Mitra, S. L. M.B., D.P.H., MAJOR, I.M.S., <i>Officiating Director of Public Health, Government of Assam</i> . Shillong.
6-8-28	R	Mitra, SUBODH, M.D. (BERLIN), M.B. (CAL.), F.R.C.S. (EDIN.). 148, Russa Road, Bhawanipore, Calcutta.
6-3-24	F	Mitter, THE RT. HON'BLE SIR BINOD CHANDRA, KT., <i>Barrister-at-Law, Member, Judicial Committee of the Privy Council</i> . London, England.

Date of Election.		
5-3-24	N	Mitter, THE HON'BLE SIR B. L., KT., M.A., B.L., <i>Barrister-at-Law, Law Member, Viceroy's Council.</i> Delhi.
5-3-24	R	Mitter, DWARKANATH, M.A., D.L., <i>Judge, High Court.</i> 12, Theatre Road, Calcutta.
4-3-29	R	Mitter, HIRANYA KUMAR, <i>Landholder.</i> 1, Jhamapukur Lane, Amherst Street P.O., Calcutta.
5-4-26	N	Mitter, KHAGENDRA NATH, M.A., <i>Professor, Presidency College.</i> 10, Dover Lane, Ballygunge, Calcutta.
5-4-26	R	Mitter, KUMAR KRISHNA, <i>Merchant and Landlord.</i> 14, Ahiritolla Street, Calcutta.
5-3-24	R	Mitter, THE HON'BLE SIR PROVASH CHANDRA, KT., C.I.E., M.L.C. 34/1, Elgin Road, Calcutta.
4-3-25	R	Mitter, PROFULLA CHANDRA, M.A. (CAL.), PH.D. (BERLIN), <i>Sir Rash Behary Ghosh Professor of Chemistry, Calcutta University.</i> 22, Garpar Road, Calcutta.
1-11-26	R	Modi, JAL R. K., B.A. 4, Camac Street, Calcutta.
1-4-25	A	Mohomed, ISMAIL ABDULLAH, <i>Merchant.</i> 21, Amratolla Lane, Calcutta.
3-1-27	N	Mohammed, GHULAM, M.A., LL.B., <i>Indian Audit and Account Service.</i> Officer on Special Duty with the Railway Board, Delhi.
5-7-26	N	Moin YAR JUNG BAHADUR, NAWAB "Musaad Manzil," Lallagooda, Hyderabad, Deccan.
7-5-28	N	Moledina, MOHAMED HASHIMI, <i>Landlord and Merchant.</i> 30, Main Street, Camp Poona.
2-5-23	R	Möller, H. P., <i>Merchant.</i> 18, Ballygunge Circular Road, Calcutta.
6-8-24	N	Moloney, WILLIAM J., <i>General Manager of Reuter's for the East.</i> c/o 26/7, Dalhousie Square, Calcutta.
2-4-28	R	Mookerjee, BHABADEB, <i>Merchant.</i> 48, Barrackpore Trunk Road, P. O. Baranagore.
1-3-26	R	Mookerjee, ADITYA NATH, M.A., PH.D., <i>Principal, Sanskrit College.</i> 10/B, Mohun Lal Street, Shambazar, Calcutta.
5-11-24	R	Mookerjee, B. N., B.A. (CANTAB.), <i>Engineer.</i> 12, Mission Row, Calcutta.
3-12-24	R	Mookerjee, J. N., <i>Civil Engineer.</i> 12, Mission Row, Calcutta.
7-5-28	R	Mookerjee, KUMUD BANDHOB, <i>Merchant and Zemindar.</i> Champdany, Baidyabati.
1-3-26	R	Mookerjee, SATISH CHANDRA, <i>Barrister-at-Law.</i> 7, Ballygunge Circular Road, Calcutta.
3-5-98	L	*Mookerjee, SIR RAJENDRA NATH, K.C.I.E., K.C.V.O., HON. F.A.S.B. 7, Harington Street, Calcutta.
2-7-24	R	Mookerjee, SYAMA PRASAD, M.A., B.L., <i>Vakil, High Court, Fellow of the University of Calcutta.</i> 77, Russa Road North, Calcutta.
29-9-99	R	Mukerjee, JATINDRA NATH, B.A., <i>Solicitor.</i> 4, Hastings Street, Calcutta.
2-8-26	R	Mukerjee, JNANENDRA NATH, D.S.C. (LONDON), F.C.S. (LONDON), <i>Fellow of the Indian Chemical Society; Guruprasad Professor of Chemistry, University of Calcutta.</i> 92, Upper Circular Road, Calcutta.
2-2-21	N	Mukerjee, SUBODH CHANDRA, SHASTRI, M.A., <i>Docteur-es-Lettres (Paris)</i> Office of the Government Examiner of Accounts, B.N.W. Ry., Gorakhpur.
5-12-27	R	Mukerjee, SUSIL KUMAR, F.R.C.S. (EDIN.), D.O. (OXON), D.O.M.S. (LOND.), <i>Ophthalmic Surgeon, Carmichael Medical College Hospitals.</i> 13, Kyd Street, Calcutta.

Alphabetical List of Ordinary Members.

CXXXV

Date of Election.		
4-6-28	R	Mukerji, MANMATHA NATH, B.E., <i>Engineer and Architect</i> . 173, Raja Dinendra Street, Calcutta.
6-2-28	R	Mukerji, MANMATHA NATH, M.A., B.L., <i>Judge, High Court</i> . 8/1, Harsi Street, Calcutta.
5-3-24	R	Mukerji, S., M.A., B.L., <i>Vakil and Zemindar</i> . 7, Old Ballygunge Road, Calcutta.
7-2-27	R	Mukherjee, HARENDRA NATH, B.SC., M.B. (CAL.), D.I.C. (LOND.), <i>Medical Practitioner</i> . Biochemical Department, Carmichael Medical College, Belgachia, Calcutta.
7-11-27	N	Mukherjee, DEVAPROSANNA, M.A., B.L., <i>Zemindar</i> . Burdwan.
5-3-24	R	Mukherjee, NARENDRA NATH, B.A. (CAL.), <i>Publisher</i> . 31, Central Avenue, Calcutta.
5-2-08	R	*Mukhopadhyaya, GIRINDRA NATH, BHISAGACHARYA, B.A., M.D., F.A.S.B. 156, Haris Mukerjee Road (North), Bhawanipur, Calcutta.
5-7-26	R	Mukhopadhyaya, PRABHAT KUMAR, M.A., <i>Research Assistant, Calcutta University</i> . 27, Govinda Ghosal Lane, Bhawanipur, Calcutta.
2-2-21	R	Mukhopadhyaya, THE HON'BLE RAMAPRASAD, M.A., B.L. 77, Russa Road North, Bhawanipore, Calcutta.
2-4-28	R	Mullick, KARTICK CHURN, KUMAR, <i>Director, Raja D. N. Mullick & Sons, Ltd.</i> Colootola Rajbati, Chittaranjan Avenue, Calcutta.
4-3-29	R	Mullick, PRAMATHA NATH, RAI BAHADUR, <i>Zemindar and Landholder</i> . 129, Cornwallis Street, Calcutta.
7-5-28	N	Murray, EUGENE FLORIAN OLIPHANT, <i>Mining Engineer</i> , Tatanagar, B. N. Ry.
4-1-26	N	Murray, HOWARD, C.I.E., LT.-COL., INDIAN ARMY, <i>Deputy Financial Adviser</i> . 5, Stanley Road, Poona.
3-6-25	N	Musa, MUHAMMAD, MOULVI, KHAN BAHADUR, M.A., <i>Principal, Chittagong Madrasah</i> . Madrasah Hill, Chittagong.
1-6-21	N	Muzammil-Ullah Khan, MOHD., HON'BLE NAWAB, KHAN BAHADUR, O.B.E., <i>Rais</i> . Bhikanpur, Dist. Aligarh, U.P.
6-12-26	R	Nag, KALIDAS, M.A. (CAL.), D.LITT. (PARIS), <i>Lecturer in Ancient Indian History and Culture, Calcutta University</i> . P-283, Darga Road, off Park Circus, Calcutta.
5-11-28	R	Nag, (MISS) SHANTI. 3, Ashutosh Mukerjee Road, Elgin Road, Calcutta.
7-3-06	N	Nahar, PURAN CHAND, RAI BAHADUR, <i>Solicitor</i> . c/o 48, Indian Mirror Street, Calcutta.
5-12-27	L	Namgyal, H.H. MAHARAJA SIR TASHI, K.C.I.E., <i>Maharaja of Sikkim</i> . Gangtok, Sikkim.
6-6-27	N	Nandi, MAHARAJA SRIS CHANDRA, M.A., M.L.C., <i>Zemindar</i> . Kasimbazar Rajbari, Kasimbazar, Murshidabad.
4-2-29	N	Narain, HIRDE, M.A., B.T., <i>Professor of History, Morris College</i> . Nagpur, C.P.
4-6-28	N	Narasimham, YECHURI, M.A., <i>Dewan, Vizianagram Samsathanam</i> . Vizianagram.
25-9-18	N	Narayan, VICTOR NITYENDRA, <i>Maharaj Kumar of Cooch Behar</i> . Cooch Behar.
7-12-26	R	Narayanawami, V., M.A. Royal Botanical Garden, Sibpur, Howrah.
5-3-28	R	Neogi, PANCHANAN, M.A., PH.D., I.E.S., <i>Professor of Chemistry, Presidency College</i> . 21, Kundu Lane, Belgachia, Calcutta.

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2-2-21	R	Mukhopadhyaya, THE HON'BLE RAMAPRASAD, M.A., B.L. 77, Russa Road North, Bhawanipore, Calcutta.
2-4-28	R	Mullick, KARTICK CHURN, KUMAR, <i>Director, Raja D. N. Mullick & Sons, Ltd.</i> Colootola Rajbati, Chittaranjan Avenue, Calcutta.
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7-5-28	N	Murray, EUGENE FLORIAN OLIPHANT, <i>Mining Engineer</i> , Tatanagar, B. N. Ry.
4-1-26	N	Murray, HOWARD, C.I.E., LT.-COL., INDIAN ARMY, <i>Deputy Financial Adviser</i> . 5, Stanley Road, Poona.
3-6-25	N	Musa, MUHAMMAD, MOULVI, KHAN BAHADUR, M.A., <i>Principal, Chittagong Madrasah</i> . Madrasah Hill, Chittagong.
1-6-21	N	Muzammil-Ullah Khan, MOHD., HON'BLE NAWAB, KHAN BAHADUR, O.B.E., <i>Rais</i> . Bhikanpur, Dist. Aligarh, U.P.
6-12-26	R	Nag, KALIDAS, M.A. (CAL.), D.LITT. (PARIS), <i>Lecturer in Ancient Indian History and Culture, Calcutta University</i> . P-283, Darga Road, off Park Circus, Calcutta.
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7-3-06	N	Nahar, PURAN CHAND, RAI BAHADUR, <i>Solicitor</i> . c/o 48, Indian Mirror Street, Calcutta.
5-12-27	L	Namgyal, H.H. MAHARAJA SIR TASHI, K.C.I.E., <i>Maharaja of Sikkim</i> . Gangtok, Sikkim.
6-6-27	N	Nandi, MAHARAJA SRIS CHANDRA, M.A., M.L.C., <i>Zemindar</i> . Kasimbazar Rajbari, Kasimbazar, Murshidabad.
4-2-29	N	Narain, HIRDE, M.A., B.T., <i>Professor of History, Morris College</i> . Nagpur, C.P.
4-6-28	N	Narasimham, YECHURI, M.A., <i>Dewan, Vizianagram Samsathanam</i> . Vizianagram.
25-9-18	N	Narayan, VICTOR NITYENDRA, <i>Maharaj Kumar of Cooch Behar</i> . Cooch Behar.
7-12-26	R	Narayanawami, V., M.A. Royal Botanical Garden, Sibpur, Howrah.
5-3-28	R	Neogi, PANCHANAN, M.A., PH.D., I.E.S., <i>Professor of Chemistry, Presidency College</i> . 21, Kundu Lane, Belgachia, Calcutta.

Date of Election.		
3-12-24	N	Newman, CHAS. F., F.R.G.S., M.C.P. Kutch Bungalow, Bhopal, C.I.
6-8-24	R	Nyss, WM. B. S., Superintendent, Excise and Salt. 175B, Lower Circular Road, Calcutta.
2-8-26	N	Oak, MADHAVA RAMCHANDRA, M.A., Professor of Philosophy and English Literature, Maharaja's College. Jaipur, Rajputana.
1-4-25	A	Oaten, EDWARD FARLEY, M.A., LL.B. (CANTAB.), I.E.S., Director of Public Instruction, Bengal. England.
7-4-15	F	Ohtani, COUNT KOZUI. San-ya-so, Edomachi, Fushimi, Kyoto, Japan.
-511-28	R	Olpadvala, E. S. 1, Corporation Street, Calcutta.
2-11-25	R	Ormond, ERNEST CHARLES, Barrister-at-Law. Bar Library, High Court, Calcutta.
6-6-23	A	Ottens, NICHOLAS, B.SC. 15, Clive Row, Calcutta.
5-12-23	N	Pande, SHIVA BANDHAN, Retired Tahsildar and Zemindar. Ramapatti, Mirzapur, U.P.
5-4-26	N	Parker, RICHARD HENRY, I.C.S., late Scholar of St. John's College, Oxford; Officiating Under Secretary to the Resident at Hyderabad. Hyderabad, Deccan.
4-11-29	A	Parry, NEVILL EDWARD, I.C.S., Deputy Commissioner, Garo Hills, Tura. Garo Hills, Assam.
5-11-19	R	*Pascoe, SIR EDWIN HALL, KT., M.A., SC.D. (CANTAB.), D.SC. (LOND.), F.G.S., F.A.S.B., Director, Geological Survey of India. Indian Museum, Calcutta.
6-5-29	N	Pawsey, C. R., Indian Civil Service. Mokokchung, Naga Hills, Assam.
5-12-27	N	Peddie, JAMES, Indian Civil Service, Magistrate and Collector. Midnapore.
6-6-88	L	Pennell, AUBRAY PERCIVAL, B.A., Barrister-at-Law. Lamb's Building, Temple, London, E.C. 4.
1-4-25	R	Perier, FERDINAND, S.J., the Most Reverend Archbishop of Calcutta. 32, Park Street, Calcutta.
6-11-89	L	*Phillot, DOUGLAS CRAVEN, LT.-COL., M.A., PH.D., M.R.A.S., F.A.S.B., Indian Army (Retired). Felsted, Essex, England.
6-2-28	F	Piddington, A. B., Judge, President, Industrial Commission of New South Wales. Sydney, Australia.
1-6-04	A	*Pilgrim, GUY E., D.SC., F.G.S., F.A.S.B. Geological Survey of India, Indian Museum, Calcutta.
7-1-29	R	Pillai, G. P., Entomologist, The Lister Antiseptics and Dressing Co. (1928), Ltd. 14, Hare Street, Calcutta.
5-3-28	A	Plessen, BARON LEOPOLD, Acting Consul-General for Germany. 2, Store Road, Ballygunge, Calcutta.
4-3-25	A	Pochhammer, WILHELM VON, Secretary to German Embassy. Tokio, Japan.
4-3-25	R	Poddar, HANUMAN PRASAD, Banker and Commission Agent. 10A, Central Avenue (South), Calcutta.
3-4-18	L	*Prashad, BAINI, D.SC., F.Z.S., F.R.S.E., F.A.S.B. Zoological Survey of India, Indian Museum, Calcutta.
3-8-25	R	Pruthi, HEM SINGH, M.SC. (PUNJAB), PH.D. (LONDON), Assistant Superintendent, Zoological Survey of India. Indian Museum, Calcutta.
1-11-26	N	Pugh, LEWIS PUGH EVANS, B.A. (OXON), Barrister-at-Law. Patna High Court, Patna.
2-1-28	N	Puri, I. M., PH.D. (CANTAB.), M.SC. (PUNJAB). Central Research Institute, Kasauli, Punjab.

Alphabetical List of Ordinary Members.

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Date of Election.		
3-12-24	R	Pushong, E. S., M.D., L.S.A., Medical Practitioner. 1, Wood Street, Calcutta.
6-2-28	R	Rafique, MOHAMAD, M.L.A. 19, Zakariah Street, Calcutta.
5-11-28	R	Rahman, NAWABZADA A. S. M. LATIFUR, M.A. (CANTAB.), Barrister-at-Law, Judge, Presidency Court of Small Causes. 10, Turner Street, Calcutta.
7-4-80	N	Rai, VEPIN CHANDRA. Giridih, Chota Nagpur.
6-2-28	N	Rai, LAKSHMI NARAIN, L.M.S. (CALCUTTA), Civil Assistant Surgeon. Benares.
1-2-22	R	*Raman, SIR CHANDRASEKHARA VENKATA, KT., M.A., D.SC., F.R.S., F.A.S.B. 210, Bowbazar Street, Calcutta.
1-11-26	N	Ramanujaswami, P. V., M.A., Vice-Principal. Maharaja's Sanskrit College, Vizianagaram.
7-3-27	R	Rankin, THE HON'BLE SIR GEORGE, KT., Chief Justice of Bengal. 9, Camac Street, Calcutta.
6-12-26	N	Rao, A. SUBBA, B.A., D.SC., F.R.M.S., Professor of Physiology and Embryology. Medical College, Bangalore.
3-12-24	R	Rao, H. SRINIVASA, M.A., D.SC., Assistant Superintendent, Zoological Survey of India. Indian Museum, Calcutta.
6-5-25	R	Rao, M. VINAYAK, RAO BAHADUR, B.A., F.G.S., Assistant Superintendent, Geological Survey of India. Indian Museum, Calcutta.
1-2-26	N	Rao, Y. RAMACHANDRA, RAO SAHIB, M.A., F.E.S., Government Entomologist, Agricultural Research Institute. Lawley Road, Coimbatore.
1-11-26	N	Rao, WUPPALA LAKSHMANA, M.A., B.SC., DR-RER-NAT. Digumarti House, Berhampore, Ganjam.
3-4-18	N	Ratnakar, JAGANNATH DAS, B.A., KAVISUDHAKAR. Shivalaghat, Benares City.
2-7-24	N	Ray, ABINASH CHANDRA, B.A. R. M. H. E. School, P. O. Deoghar, E.I.R.
2-7-24	R	Ray, BHABENDRA CHANDRA, Zemindar. 6, Short Street, Calcutta.
7-9-10	R	Ray, KUMAR SARAT KUMAR, M.A., M.B.A.S. 52, Police Hospital Road, Entally, Calcutta.
5-1-21	N	Ray, JAGADISNATH, MAHARAJA, Maharaja of Dinajpore. Dinajpore.
5-3-90	R	*Ray, SIR PROFULLA CHANDRA, KT., C.I.E., D.SC., F.A.S.B. University College of Science, 92, Upper Circular Road, Calcutta.
3-3-20	R	Raye, NARENDRA NATH, M.A., Principal. Ripon College, Calcutta.
5-11-28	L	Reinhart, WERNER, Merchant. c/o Messrs. Volkart Bros., Rychenberg, Winterthur, Switzerland.
6-2-28	R	Reneman, NICO. 52/1, Ballygunge Circular Road, Calcutta.
3-8-25	N	Reuben, DAVID EZRA, I.C.S. Judge's House, Cuttack, B. N. Ry.
2-4-24	F	Richards, F. J., I.C.S. 6, Lexham Gardens, London, W. 8.
1 4-29	N	Rizvi, SYED HAMID HUSAIN, Excise Sub-Inspector. Mohalla Sanechri, Near Musjid of Munshi Sk. Ghasu, Saugor, C.P.
3-12-24	L	Roerich, GEORGE NICHOLAS, M.A., M.B.A.S., Orientalist. 310, Riverside Drive, New York, U.S.A.
2-7-28	L	Roerich, NICHOLAS, Professor, Honorary President, Master Institute of United Arts, New York, U.S.A., Artist-Painter. 310, Riverside Drive, New York, U.S.A.
3-12-24	N	Rogers, T. E., Tea Planter. Nagadhoolie Tea Estate, Mariani, Assam.

Date of Election.		
5-3-24	N	Mitter, THE HON'BLE SIR B. L., KT., M.A., B.L., <i>Barrister-at-Law, Law Member, Viceroy's Council.</i> Delhi.
5-3-24	R	Mitter, DWARKANATH, M.A., D.L., <i>Judge, High Court.</i> 12, Theatre Road, Calcutta.
4-3-29	R	Mitter, HIRANYA KUMAR, <i>Landholder.</i> 1, Jhamapukur Lane, Amherst Street P.O., Calcutta.
5-4-26	N	Mitter, KHAGENDRA NATH, M.A., <i>Professor, Presidency College.</i> 10, Dover Lane, Ballygunge, Calcutta.
5-4-26	R	Mitter, KUMAR KRISHNA, <i>Merchant and Landlord.</i> 14, Ahiritolla Street, Calcutta.
5-3-24	R	Mitter, THE HON'BLE SIR PROVASH CHANDRA, KT., C.I.E., M.L.C. 34/1, Elgin Road, Calcutta.
4-3-25	R	Mitter, PROFULLA CHANDRA, M.A. (CAL.), PH.D. (BERLIN), <i>Sir Rash Behary Ghosh Professor of Chemistry, Calcutta University.</i> 22, Garpar Road, Calcutta.
1-11-26	R	Modi, JAL R. K., B.A. 4, Camac Street, Calcutta.
1-4-25	A	Mohomed, ISMAIL ABDULLAH, <i>Merchant.</i> 21, Amratolla Lane, Calcutta.
3-1-27	N	Mohammed, GHULAM, M.A., LL.B., <i>Indian Audit and Account Service.</i> Officer on Special Duty with the Railway Board, Delhi.
5-7-26	N	Moin YAR JUNG BAHADUR, NAWAB "Musaad Manzil," Lallagooda, Hyderabad, Deccan.
7-5-28	N	Moledina, MOHAMED HASHIMI, <i>Landlord and Merchant.</i> 30, Main Street, Camp Poona.
2-5-23	R	Möller, H. P., <i>Merchant.</i> 18, Ballygunge Circular Road, Calcutta.
6-8-24	N	Moloney, WILLIAM J., <i>General Manager of Reuter's for the East.</i> c/o 26/7, Dalhousie Square, Calcutta.
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3-5-93	L	*Mookerjee, SIR RAJENDRA NATH, K.C.I.E., K.C.V.O., HON. F.A.S.B. 7, Harington Street, Calcutta.
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2-2-21	N	Mukerjee, SUBODH CHANDRA, SHASTRI, M.A., <i>Docteur-es-Lettres (Paris)</i> Office of the Government Examiner of Accounts, B.N.W. Ry., Gorakhpur.
5-12-27	R	Mukerjee, SUSIL KUMAR, F.R.C.S. (EDIN.), D.O. (OXON), D.O.M.S. (LOND.), <i>Ophthalmic Surgeon, Carmichael Medical College Hospitals.</i> 13, Kyd Street, Calcutta.

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7-11-27	N	Mukherjee, DEVAPROSANNA, M.A., B.L., <i>Zemindar</i> . Burdwan.
5-3-24	R	Mukherjee, NARENDRA NATH, B.A. (CAL.), <i>Publisher</i> . 31, Central Avenue, Calcutta.
5-2-08	R	*Mukhopadhyaya, GIRINDRA NATH, BHISAGACHARYA, B.A., M.D., F.A.S.B. 156, Haris Mukerjee Road (North), Bhawanipur, Calcutta.
5-7-26	R	Mukhopadhyaya, PRABHAT KUMAR, M.A., <i>Research Assistant, Calcutta University</i> . 27, Govinda Ghosal Lane, Bhawanipur, Calcutta.
2-2-21	R	Mukhopadhyaya, THE HON'BLE RAMAPRASAD, M.A., B.L. 77, Russa Road North, Bhawanipore, Calcutta.
2-4-28	R	Mullick, KARTICK CHURN, KUMAR, <i>Director, Raja D. N. Mullick & Sons, Ltd.</i> Colootola Rajbati, Chittaranjan Avenue, Calcutta.
4-3-29	R	Mullick, PRAMATHA NATH, RAI BAHADUR, <i>Zemindar and Landholder</i> . 129, Cornwallis Street, Calcutta.
7-5-28	N	Murray, EUGENE FLORIAN OLIPHANT, <i>Mining Engineer</i> , Tatanagar, B. N. Ry.
4-1-26	N	Murray, HOWARD, C.I.E., LT.-COL., INDIAN ARMY, <i>Deputy Financial Adviser</i> . 5, Stanley Road, Poona.
3-6-25	N	Musa, MUHAMMAD, MOULVI, KHAN BAHADUR, M.A., <i>Principal, Chittagong Madrasah</i> . Madrasah Hill, Chittagong.
1-6-21	N	Muzammil-Ullah Khan, MOHD., HON'BLE NAWAB, KHAN BAHADUR, O.B.E., <i>Rais</i> . Bhikanpur, Dist. Aligarh, U.P.
6-12-26	R	Nag, KALIDAS, M.A. (CAL.), D.LITT. (PARIS), <i>Lecturer in Ancient Indian History and Culture, Calcutta University</i> . P-283, Darga Road, off Park Circus, Calcutta.
5-11-28	R	Nag, (MISS) SHANTI. 3, Ashutosh Mukerjee Road, Elgin Road, Calcutta.
7-3-06	N	Nahar, PURAN CHAND, RAI BAHADUR, <i>Solicitor</i> . c/o 48, Indian Mirror Street, Calcutta.
5-12-27	L	Namgyal, H.H. MAHARAJA SIR TASHI, K.C.I.E., <i>Maharaja of Sikkim</i> . Gangtok, Sikkim.
6-6-27	N	Nandi, MAHARAJA SRIS CHANDRA, M.A., M.L.C., <i>Zemindar</i> . Kasimbazar Rajbari, Kasimbazar, Murshidabad.
4-2-29	N	Narain, HIRDE, M.A., B.T., <i>Professor of History, Morris College</i> . Nagpur, C.P.
4-6-28	N	Narasimham, YECHURI, M.A., <i>Dewan, Vizianagram Samsathanam</i> . Vizianagram.
25-9-18	N	Narayan, VICTOR NITYENDRA, <i>Maharaj Kumar of Cooch Behar</i> . Cooch Behar.
7-12-26	R	Narayanaswami, V., M.A. Royal Botanical Garden, Sibpur, Howrah.
5-3-28	R	Neogi, PANCHANAN, M.A., PH.D., I.E.S., <i>Professor of Chemistry, Presidency College</i> . 21, Kundu Lane, Belgachia, Calcutta.

Date of Election.		
3-12-24	N	Newman, CHAS. F., F.R.G.S., M.C.P. Kutchia Bungalow, Bhopal, C.I.
6-8-24	R	Nyss, WM. B. S., <i>Superintendent, Excise and Salt</i> . 175B, Lower Circular Road, Calcutta.
2-8-26	N	Oak, MADHAVA RAMCHANDRA, M.A., <i>Professor of Philosophy and English Literature, Maharaja's College</i> . Jaipur, Rajputana.
1-4-25	A	Oaten, EDWARD FARLEY, M.A., LL.B. (CANTAB.), I.E.S., <i>Director of Public Instruction, Bengal</i> . England.
7-4-15	F	Ohtani, COUNT KOZU. San-ya-so, Edomachi, Fushimi, Kyoto, Japan.
-511-28	R	Olpadvala, E. S. 1, Corporation Street, Calcutta.
2-11-25	R	Ormond, ERNEST CHARLES, <i>Barrister-at-Law</i> . Bar Library, High Court, Calcutta.
6-6-23	A	Ottens, NICHOLAS, B.SC. 15, Clive Row, Calcutta.
5-12-23	N	Pande, SHIVA BANDHAN, <i>Retired Tahsildar and Zemindar</i> . Ramapatti, Mirzapur, U.P.
5-4-26	N	Parker, RICHARD HENRY, I C.S., <i>late Scholar of St. John's College, Oxford ; Officiating Under Secretary to the Resident at Hyderabad</i> . Hyderabad, Deccan.
4-11-29	A	Parry, NEVILL EDWARD, I.C.S., <i>Deputy Commissioner, Garo Hills, Tura</i> . Garo Hills, Assam.
5-11-19	R	*Pascoe, SIR EDWIN HALL, KT., M.A., SC.D. (CANTAB.), D.SC. (LOND.), F.G.S., F.A.S.B., <i>Director, Geological Survey of India</i> . Indian Museum, Calcutta.
6-5-29	N	Pawsey, C. R., <i>Indian Civil Service</i> . Mokokchung, Naga Hills, Assam.
5-12-27	N	Peddie, JAMES, <i>Indian Civil Service, Magistrate and Collector</i> . Midnapore.
6-6-88	L	Pennell, AUBRAY PERCIVAL, B.A., <i>Barrister-at-Law</i> . Lamb's Building, Temple, London, E.C. 4.
1-4-25	R	Perier, FERDINAND, S.J., <i>the Most Reverend Archbishop of Calcutta</i> . 32, Park Street, Calcutta.
6-11-89	L	*Phillot, DOUGLAS CRAVEN, LT.-COL., M.A., PH.D., M.R.A.S., F.A.S.B., <i>Indian Army (Retired)</i> . Felsted, Essex, England.
6-2-28	F	Piddington, A. B., <i>Judge, President, Industrial Commission of New South Wales</i> . Sydney, Australia.
1-6-04	A	*Pilgrim, GUY E., D.SC., F.G.S., F.A.S.B. Geological Survey of India, Indian Museum, Calcutta.
7-1-29	R	Pillai, G. P., <i>Entomologist, The Lister Antiseptics and Dressing Co. (1928), Ltd.</i> 14, Hare Street, Calcutta.
5-3-28	A	Plessen, BARON LEOPOLD, <i>Acting Consul-General for Germany</i> . 2, Store Road, Ballygunge, Calcutta.
4-3-25	A	Pochhammer, WILHELM VON, <i>Secretary to German Embassy</i> . Tokio, Japan.
4-3-25	R	Poddar, HANUMAN PRASAD, <i>Banker and Commission Agent</i> . 10A, Central Avenue (South), Calcutta.
3-4-18	L	*Prashad, BAIJI, D.SC., F.Z.S., F.R.S.E., F.A.S.B. Zoological Survey of India, Indian Museum, Calcutta.
3-8-25	R	Pruthi, HEM SINGH, M.SC. (PUNJAB), PH.D. (LONDON), <i>Assistant Superintendent, Zoological Survey of India</i> . Indian Museum, Calcutta.
1-11-26	N	Pugh, LEWIS PUGH EVANS, B.A. (OXON), <i>Barrister-at-Law</i> . Patna High Court, Patna.
2-1-28	N	Puri, I. M., PH.D. (CANTAB.), M.SC. (PUNJAB). Central Research Institute, Kasauli, Punjab.

Alphabetical List of Ordinary Members. cxxxvii

Date of Election.		
3-12-24	R	Pushong, E. S., M.D., L.S.A., <i>Medical Practitioner</i> . 1, Wood Street, Calcutta.
6-2-28	R	Rafique, MOHAMAD, M.L.A. 19, Zakariah Street, Calcutta.
5-11-28	R	Rahman, NAWABZADA A. S. M. LATIFUR, M.A. (CANTAB.), <i>Barister-at-Law, Judge, Presidency Court of Small Causes</i> . 10, Turner Street, Calcutta.
7-4-80	N	Rai, VEPIN CHANDRA. Giridih, Chota Nagpur.
6-2-28	N	Rai, LAKSHMI NARAIN, L.M.S. (CALCUTTA), <i>Civil Assistant Surgeon</i> . Benares.
1-2-22	R	*Raman, SIR CHANDRASEKHARA VENKATA, KT., M.A., D.S.C., F.R.S., F.A.S.B. 210, Bowbazar Street, Calcutta.
1-11-26	N	Ramanujaswami, P. V., M.A., <i>Vice-Principal</i> . Maharaja's Sanskrit College, Vizianagaram.
7-3-27	R	Rankin, THE HON'BLE SIR GEORGE, KT., <i>Chief Justice of Bengal</i> . 9, Camac Street, Calcutta.
6-12-26	N	Rao, A. SUBBA, B.A., D.S.C., F.R.M.S., <i>Professor of Physiology and Embryology</i> . Medical College, Bangalore.
3-12-24	R	Rao, H. SRINIVASA, M.A., D.S.C., <i>Assistant Superintendent, Zoological Survey of India</i> . Indian Museum, Calcutta.
6-5-25	R	Rao, M. VINAYAK, RAO BAHADUR, B.A., F.G.S., <i>Assistant Superintendent, Geological Survey of India</i> . Indian Museum, Calcutta.
1-2-26	N	Rao, Y. RAMACHANDRA, RAO SAHIB, M.A., F.E.S., <i>Government Entomologist, Agricultural Research Institute</i> . Lawley Road, Coimbatore.
1-11-26	N	Rao, WUPPALA LAKSHMANA, M.A., B.S.C., DR-RER-NAT. Digumarti House, Berhampore, Ganjam.
3-4-18	N	Ratnakar, JAGANNATH DAS, B.A., KAVISUDEHAKAR. Shivalaghat, Benares City.
2-7-24	N	Ray, ABINASH CHANDRA, B.A. R. M. H. E. School, P. O. Deoghar, E.I.R.
2-7-24	R	Ray, BHABENDRA CHANDRA, <i>Zemindar</i> . 6, Short Street, Calcutta.
7-9-10	R	Ray, KUMAR SARAT KUMAR, M.A., M.R.A.S. 52, Police Hospital Road, Entally, Calcutta.
5-1-21	N	Ray, JAGADISNATH, MAHARAJA, <i>Maharaja of Dinajpore</i> . Dinajpore.
5-3-90	R	*Ray, SIR PROFULLA CHANDRA, KT., C.I.E., D.S.C., F.A.S.B. University College of Science, 92, Upper Circular Road, Calcutta.
3-3-20	R	Raye, NARENDRA NATH, M.A., <i>Principal</i> . Ripon College, Calcutta.
5-11-28	L	Reinhart, WERNER, <i>Merchant</i> . c/o Messrs. Volkart Bros., Rychenberg, Winterthur, Switzerland.
6-2-28	R	Reneman, NICO. 52/1, Ballygunge Circular Road, Calcutta.
3-8-25	N	Reuben, DAVID EZRA, I.C.S. Judge's House, Cuttack, B. N. Ry.
2-4-24	F	Richards, F. J., I.C.S. 6, Lexham Gardens, London, W. 8.
1 4-29	N	Rizvi, SYED HAMID HUSAIN, <i>Excise Sub-Inspector</i> . Mohalla Sanechri, Near Musjid of Munshi Sk. Ghassu, Saugor, C.P.
3-12-24	L	Roerich, GEORGE NICHOLAS, M.A., M.R.A.S., <i>Orientalist</i> . 310, Riverside Drive, New York, U.S.A.
2-7-28	L	Roerich, NICHOLAS, <i>Professor, Honorary President, Master Institute of United Arts, New York, U.S.A., Artist-Painter</i> . 310, Riverside Drive, New York, U.S.A.
3-12-24	N	Rogers, T. E., <i>Tea Planter</i> . Nagadhoolie Tea Estate, Mariani, Assam.

Date of Election.		
3-12-24	N	Newman, CHAS. F., F.R.G.S., M.C.P. Kutchia Bungalow, Bhopal, C.I.
6-8-24	R	Nyss, WM. B. S., <i>Superintendent, Excise and Salt.</i> 175B, Lower Circular Road, Calcutta.
2-8-26	N	Oak, MADHAVA RAMCHANDRA, M.A., <i>Professor of Philosophy and English Literature, Maharaja's College.</i> Jaipur, Rajputana.
1-4-25	A	Oaten, EDWARD FARLEY, M.A., LL.B. (CANTAB.), I.E.S., <i>Director of Public Instruction, Bengal.</i> England.
7-4-15	F	Ohtani, COUNT KOZUI. San-ya-so, Edomachi, Fushimi, Kyoto, Japan.
-511-28	R	Olpadvala, E. S. 1, Corporation Street, Calcutta.
2-11-25	R	Ormond, ERNEST CHARLES, <i>Barrister-at-Law.</i> Bar Library, High Court, Calcutta.
6-6-23	A	Ottens, NICHOLAS, B.SC. 15, Clive Row, Calcutta.
5-12-23	N	Pande, SHIVA BANDHAN, <i>Retired Tahsildar and Zemindar.</i> Ramapatti, Mirzapur, U.P.
5-4-26	N	Parker, RICHARD HENRY, I C.S., <i>late Scholar of St. John's College, Oxford ; Officiating Under Secretary to the Resident at Hyderabad.</i> Hyderabad, Deccan.
4-11-29	A	Parry, NEVILL EDWARD, I.C.S., <i>Deputy Commissioner, Garo Hills, Tura.</i> Garo Hills, Assam.
5-11-19	R	*Pascoe, SIR EDWIN HALL, KT., M.A., SC.D. (CANTAB.), D.SC. (LOND.), F.G.S., F.A.S.B., <i>Director, Geological Survey of India.</i> Indian Museum, Calcutta.
6-5-29	N	Pawsey, C. R., <i>Indian Civil Service.</i> Mokokchung, Naga Hills, Assam.
5-12-27	N	Peddie, JAMES, <i>Indian Civil Service, Magistrate and Collector.</i> Midnapore.
6-6-88	L	Pennell, AUBRAY PERCIVAL, B.A., <i>Barrister-at-Law.</i> Lamb's Building, Temple, London, E.C. 4.
1-4-25	R	Perier, FERDINAND, S.J., <i>the Most Reverend Archbishop of Calcutta.</i> 32, Park Street, Calcutta.
6-11-89	L	*Phillot, DOUGLAS CRAVEN, LT.-COL., M.A., PH.D., M.R.A.S., F.A.S.B., <i>Indian Army (Retired).</i> Felsted, Essex, England.
6-2-28	F	Piddington, A. B., <i>Judge, President, Industrial Commission of New South Wales.</i> Sydney, Australia.
1-6-04	A	*Pilgrim, GUY E., D.SC., F.G.S., F.A.S.B. Geological Survey of India, Indian Museum, Calcutta.
7-1-29	R	Pillai, G. P., <i>Entomologist, The Lister Antiseptics and Dressing Co. (1928), Ltd.</i> 14, Hare Street, Calcutta.
5-3-28	A	Plessen, BARON LEOPOLD, <i>Acting Consul-General for Germany.</i> 2, Store Road, Ballygunge, Calcutta.
4-3-25	A	Pochhammer, WILHELM VON, <i>Secretary to German Embassy.</i> Tokio, Japan.
4-3-25	R	Poddar, HANUMAN PRASAD, <i>Banker and Commission Agent.</i> 10A, Central Avenue (South), Calcutta.
3-4-18	L	*Prashad, BAIJI, D.SC., F.Z.S., F.R.S.E., F.A.S.B. Zoological Survey of India, Indian Museum, Calcutta.
3-8-25	R	Pruthi, HEM SINGH, M.SC. (PUNJAB), PH.D. (LONDON), <i>Assistant Superintendent, Zoological Survey of India.</i> Indian Museum, Calcutta.
1-11-26	N	Pugh, LEWIS PUGH EVANS, B.A. (OXON), <i>Barrister-at-Law.</i> Patna High Court, Patna.
2-1-28	N	Puri, I. M., PH.D. (CANTAB.), M.SC. (PUNJAB). Central Research Institute, Kasauli, Punjab.

Alphabetical List of Ordinary Members. cxxxvii

Date of Election.		
3-12-24	R	Pushong, E. S., M.D., L.S.A., <i>Medical Practitioner</i> . 1, Wood Street, Calcutta.
6-2-28	R	Rafique, MOHAMAD, M.L.A. 19, Zakariah Street, Calcutta.
5-11-28	R	Rahman, NAWABZADA A. S. M. LATIFUR, M.A. (CANTAB.), <i>Barister-at-Law, Judge, Presidency Court of Small Causes</i> . 10, Turner Street, Calcutta.
7-4-80	N	Rai, VEPIN CHANDRA. Giridih, Chota Nagpur.
6-2-28	N	Rai, LAKSEMI NARAIN, L.M.S. (CALCUTTA), <i>Civil Assistant Surgeon</i> . Benares.
1-2-22	R	*Raman, SIR CHANDRASEKHARA VENKATA, KT., M.A., D.S.C., F.R.S., F.A.S.B. 210, Bowbazar Street, Calcutta.
1-11-26	N	Ramanujaswami, P. V., M.A., <i>Vice-Principal</i> . Maharaja's Sanskrit College, Vizianagaram.
7-3-27	R	Rankin, THE HON'BLE SIR GEORGE, KT., <i>Chief Justice of Bengal</i> . 9, Camac Street, Calcutta.
6-12-26	N	Rao, A. SUBBA, B.A., D.S.C., F.R.M.S., <i>Professor of Physiology and Embryology</i> . Medical College, Bangalore.
3-12-24	R	Rao, H. SRINIVASA, M.A., D.S.C., <i>Assistant Superintendent, Zoological Survey of India</i> . Indian Museum, Calcutta.
6-5-25	R	Rao, M. VINAYAK, RAO BAHADUR, B.A., F.G.S., <i>Assistant Superintendent, Geological Survey of India</i> . Indian Museum, Calcutta.
1-2-26	N	Rao, Y. RAMACHANDRA, RAO SAHIB, M.A., F.E.S., <i>Government Entomologist, Agricultural Research Institute</i> . Lawley Road, Coimbatore.
1-11-26	N	Rao, WUPPALA LAKSHMANA, M.A., B.S.C., DR-RER-NAT. Digumarti House, Berhampore, Ganjam.
3-4-18	N	Ratnakar, JAGANNATH DAS, B.A., KAVISUDHAKAR. Shivalaghat, Benares City.
2-7-24	N	Ray, ABINASH CHANDRA, B.A. R. M. H. E. School, P. O. Deoghar, E.I.R.
2-7-24	R	Ray, BHABENDRA CHANDRA, <i>Zemindar</i> . 6, Short Street, Calcutta.
7-9-10	R	Ray, KUMAR SARAT KUMAR, M.A., M.R.A.S. 52, Police Hospital Road, Entally, Calcutta.
5-1-21	N	Ray, JAGADISNATH, MAHARAJA, <i>Maharaja of Dinajpore</i> . Dinajpore.
5-3-90	R	*Ray, SIR PROFULLA CHANDRA, KT., C.I.E., D.S.C., F.A.S.B. University College of Science, 92, Upper Circular Road, Calcutta.
3-3-20	R	Raye, NARENDRA NATH, M.A., <i>Principal</i> . Ripon College, Calcutta.
5-11-28	L	Reinhart, WERNER, <i>Merchant</i> . c/o Messrs. Volkart Bros., Rychenberg, Winterthur, Switzerland.
6-2-28	R	Reneman, NICO. 52/1, Ballygunge Circular Road, Calcutta.
3-8-25	N	Reuben, DAVID EZRA, I.C.S. Judge's House, Cuttack, B. N. Ry.
2-4-24	F	Richards, F. J., I.C.S. 6, Lexham Gardens, London, W. 8.
1 4-29	N	Rizvi, SYED HAMID HUSAIN, <i>Excise Sub-Inspector</i> . Mohalla Sanechri, Near Musjid of Munshi Sk. Ghassu, Saugor, C.P.
3-12-24	L	Roerich, GEORGE NICHOLAS, M.A., M.R.A.S., <i>Orientalist</i> . 310, Riverside Drive, New York, U.S.A.
2-7-28	L	Roerich, NICHOLAS, <i>Professor, Honorary President, Master Institute of United Arts, New York, U.S.A., Artist-Painter</i> . 310, Riverside Drive, New York, U.S.A.
3-12-24	N	Rogers, T. E., <i>Tea Planter</i> . Nagadhoolie Tea Estate, Mariani, Assam.

Date of Election.		
7-5-24	A	Rose, G. F., <i>Director, Messrs. Andrew Yule & Co., Ltd.</i> 8, Clive Row, Calcutta.
4-12-01	F	*Ross, SIR EDWARD DENISON, KT., C.I.E., PH.D., F.A.S.B., <i>Director, School of Oriental Studies.</i> Finsbury Circus, London, E.C. 2.
2-1-28	N	Row, R., M.D., D.SC. (LOND.), <i>Professor of Pathology, Grant Medical College.</i> 27, New Marine Lines, Fort, Bombay.
3-7-18	R	Roy, BIDHAN CHANDRA, B.A. (CAL.), M.D., F.R.C.S., M.R.C.P. (LOND.). 36, Wellington Street, Calcutta.
7-9-21	R	Roy, HEM CHANDRA, M.A., PH.D. 42A, Bosepara Lane, Baghbazar, Calcutta.
5-2-19	R	Roy, SASADHAR. 48/1, Chaulpatty Road, Bhawanipur, Calcutta.
2-4-28	N	Roy, SUHRID KUMAR, B.SC., PH.D., F.G.S., <i>Professor of Geology, Indian School of Mines.</i> Dhanbad.
7-7-20	R	Roy-Chaudhuri, HEM CHANDRA, M.A., PH.D. 28, Gopal Bose Lane, Jhamapukur, Calcutta.
6-8-24	R	Roy-Chowdhury, BRAJENDRA KISHORE, <i>Zemindar.</i> 53, Sukea Street, Calcutta.
1-2-26	N	Ruthnaswamy, M., M.A., <i>Barrister-at-Law, Principal, Law College.</i> Esplanade, Madras.
7-5-28	N	Saha, MEGH NAD, D.SC., F.R.S., <i>Professor of Physics, University of Allahabad.</i> Katra, Allahabad.
5-11-24	N	*Sahni, B., D.SC., F.A.S.B. <i>Professor of Botany.</i> The University, Lucknow.
2-11-25	R	Sanaullah, MUHAMMAD, M.A., <i>Professor of Arabic and Persian, Presidency College.</i> 16, Hyat Khan Lane, Seal-dah, Calcutta.
6-5-29	R	Sanyal, SRISH CHANDRA, <i>Astronomer.</i> 25, Rani Branch Road, P.O. Cossipur, Calcutta.
3-12-24	R	Sarkar, C. K., C.E., <i>Engineer and Architect.</i> 10, Hastings Street, Calcutta.
1-11-22	N	Sarkar, SURESH CHANDRA, RAI BAHADUR, M.A., <i>Retired Dy. Magistrate and Dy. Collector.</i> Barganda, Giridih.
7-3-27	R	Sarma, SIR B. NARASIMHA, K.C.S.I., <i>President, Railway Rates Advisory Committee.</i> 24/1, Ballygunge Circular Road, Calcutta.
3-3-09	R	Sarvadhikary, SIR DEVAPRASAD, KT., C.I.E., O.B.E., C.B.E., M.A., B.L., F.C.U., LL.D. (ABERDEEN), LL.D. (ST. ANDREWS), SURIRATNA, VIDYARATNAKAR, JNANA-SINDHU. 20, Suri Lane, Entally, Calcutta.
6-5-29	N	Sastri, D. S. BALASUBRAMANIYA, <i>Bhashachatushtaya Pandita (Passed Nyaya Mimamsa Siromoni Class in 1913), Telugu Pandit, Borstal School, Tanjore.</i> Borstal Teachers' Lines, Tanjore.
7-5-28	N	Sastri, HIRANANDA, M.A., M.O.L., D. LITT., <i>Government Epigraphist for India.</i> Baikie House, Ootacamund, Nilgiris.
2-4-28	R	Sen, BENOF KUMAR, M.A., <i>Professor of History, Presidency College.</i> 3/1A, Chidam Mudy Lane, Calcutta.
1-4-25	R	Sen, BENOF CHANDRA, M.A., <i>Professor of History, City College.</i> 7, Bishwakosh Lane, Baghbazar, Calcutta.
3-12-24	R	Sen, H. K., M.A., D.SC. (LONDON), D.I.C., <i>Professor of Chemistry, University College of Science.</i> 92, Upper Circular Road, Calcutta.
7-5-02	R	Sen, JOGENDRANATH, M.A., VIDYARATNA, VIDYABHUSAN. 32, Prasanna Kumar Tagore Street, Calcutta.

Alphabetical List of Ordinary Members.

CXXXIX

Date of Election.		
5-12-23	L	Sen, LAKSHMAN, H.H. RAJA OF SUKET. Suket State, Punjab.
3-6-29	R	Sen, PRABODH CHANDRA, M.A., <i>Research Assistant, Calcutta University.</i> 12, Radhanath Mallik Lane, Calcutta.
1-4-29	R	Sen-Gupta, NARES CHANDRA, M.A., D.L., <i>Advocate, High Court.</i> 128-B, Justice Chandra Madhab Road, Bhawanipore, Calcutta.
5-4-26	R	Senior-White, RONALD, F.E.S., F.R.S.T.M. & H., <i>Malariaologist.</i> B. N. Ry. House, Kidderpore, Calcutta.
1-12-97	R	Seth, MESROVB JACOB, M.R.A.S., M.S.A., F.R.S.A., <i>Examiner in Classical Armenian to the Calcutta University.</i> 13, Elliott Road, Calcutta.
1-2-26	N	Setna, S. B., M.Sc., <i>Lecturer.</i> The Royal Institute of Science, Bombay.
5-7-11	L	*Sewell, ROBERT BERESFORD SEYMOUR, M.A., SC.D. (CANTAB.), M.R.C.S., L.R.C.P., F.Z.S., F.L.S., F.A.S.B., LT.-COL., I.M.S. <i>Director, Zoological Survey of India.</i> Indian Museum, Calcutta.
5-3-28	R	Shaha, BRAJABULLAV, M.B., D.T.M., <i>Medical Practitioner.</i> 45A, Sovabazar Street, Calcutta.
7-2-23	R	Shanks, GEORGE, MAJOR, I.M.S., <i>Professor of Pathology.</i> Medical College, Calcutta.
2-11-25	N	Sharif, MOHAMMAD, D.SC., F.R.M.S., F.L.S. <i>Lecturer in Zoology, Muslim University, Aligarh.</i>
6-5-29	N	Sharma, SRI RAM, M.A., M.R.A.S., M.A.O.S., <i>Professor of History.</i> D.A.-V. College, Lahore.
4-2-85	L	*Shāstrī, HARAPRASAD, MAHĀMAHOPĀDEHYĀYA, C.I.E., M.A., D.LITT., F.A.S.B., HON. MEMBER, R.A.S. 26, Pataldanga Street, Calcutta.
2-4-28	A	Shaw, EDWARD BRIAN, M.A. (CAMBRIDGE), I.C.S. Nowgong, Assam.
2-5-23	N	Shebbeare, E. O., <i>Conservator of Forests, Darjeeling.</i>
6-1-09	N	Shirreff, ALEXANDER GRIERSON, B.A., I.C.S. Sitapur, U.P.
4-1-26	R	Shortt, H. E., MAJOR, I.M.S., <i>Director, Kala-azar Commission.</i> Golaghat, Assam.
6-2-28	L	Shumsher JUNG BAHADUR RANA, SIR KAISER, K.B.E., SUPRADIPTA MANYAVARA, LIEUT.-GENERAL, <i>Nepalese Army.</i> Kaiser Mahal, Kathmandu, Nepal.
5-2-02	N	Shyam Lal, LALA, M.A., LL.B. Nawabganj, Cawnpore, U.P.
1-4-25	R	Sidiq, SYED MOHAMMAD, <i>Unani Physician.</i> 11, Harin Bari 1st Lane, Calcutta.
3-12-24	N	Siddiqi, A., M.A. (ALLAHABAD), PH.D. (GÖTTINGEN), <i>Professor of Arabic and Islamic Studies.</i> University of Allahabad, Allahabad.
4-11-29	R	Siddiqi, MOHAMMAD ZUBAYR, <i>Sir Asutosh Professor of Islamic Culture, Calcutta University.</i> 28/1, Jhautolla Road, Park Circus, Calcutta.
5-3-13	L	*Simonsen, JOHN LIONEL, D.SC., F.I.C., F.A.S.B. 16/36, University College of North Wales, Bangor, North Wales.
6-2-18	N	Singh, BADA KAJI MARICHI MAN. 38, Khichapokhari, Kathmandu, Nepal.
6-12-26	R	Singh, BAWA RAMNIK, RAI BAHADUR, <i>Civil Engineer,</i> E. B. Ry. 3, Koilaghat Street, Calcutta.
4-11-29	R	Singh, JAIPAL, M.A., (<i>Modern Greats</i>), St. John's College, Oxford University, <i>Executive Assistant, Burmah-Shell</i> Calcutta.
29-8-99	N	Singh, SIR PRABHU NARAIN, H.H. THE MAHARAJA BAHADUR, G.C.I.E., G.C.S.I., <i>Maharaja of Benares.</i> Ramnagar Fort, Benares.

Date of Election		
7-4-09	N	Singh , PRITHWIPAL, RAJA, F.R.G.S., F.R.S.A., F.T.S., <i>Talukdar of Surajpur</i> . Chandrahas Palace, Hathausda, Barabanki, Oudh.
6-12-26	N	Singh , RAM, <i>Executive Engineer, E. B. Ry.</i> Ruhea Construction, Dinaipur, E. B. Ry.
7-2-94	N	Singh , VISHWA NATH, H.H. THE MAHARAJA BAHADUR. Chhatturpur, Bundelkhund.
5-9-12	N	Singhi , BAHADUR SINGH. Azimganj, Murshidabad.
3-4-18	N	Sinha , BHUPENDRA NARAYAN, RAJA BAHADUR, B.A. Nashipur Rajbati, Nashipur.
7-5-28	F	Sinha , LORD OF RAIPUR. Queen Anne Mansions, St. James Park, London.
4-3-25	R	Sinha , PURNA CHANDRA, <i>Landholder</i> . 146, Baranoshi Ghosh Street, Jorasanko, Calcutta.
2-7-13	N	Sinha , RUDRA DATTA, M.A., LL.B., M.R.A.S. Nazirabad Road, Lucknow.
6-6-27	N	Sinha , SHEONANDAN PRASAD, M.B., <i>Assistant Surgeon</i> . Chatra, Dt. Hazaribagh.
6-2-28	R	Sinha , SUHRID CHANDRA, KUMAR, M.SC. 15/1/1, Ramakanto Bose Street, Bagh Bazar, Calcutta.
4-1-26	N	Sinton , J. A., O.B.E., MAJOR, I.M.S., V.C., <i>Officer-in-Charge, Malaria Bureau</i> . Central Research Institute, Kasauli.
5-7-16	L	Sircar , GANAPATI, VIDYARATNA. 69, Beliaghatta Main Road, Calcutta.
5-3-24	R	Sircar , N. N., M.A., B.L., <i>Barrister-at-Law</i> . 36/1, Elgin Road, Calcutta.
5-3-24	R	Sircar , SIR NIL RATAN, KT., M.A., M.D., <i>Physician</i> . 7, Short Street, Calcutta.
2-6-20	R	Skinner , S. A., <i>Engineer and Director, Messrs. Jessop & Co., Ltd.</i> 93, Clive Street, Calcutta.
1-3-26	R	Snaith , JOHN FRANK, <i>Managing Director, Messrs. Hamilton & Co.</i> 8, Old Court House Street, Calcutta.
2-8-26	R	Sohoni , VISHVANATH VISHNU, B.A., B.SC., <i>Meteorologist</i> . The Observatory, Alipore, Calcutta.
5-8-29	R	Sommerfeld , ALFRED, <i>Merchant</i> . 5, Ballygunge Park, Calcutta.
4-2-29	R	Srimani , JOGGESWAR, L.M.S., <i>Zemindar and Medical Practitioner</i> . Chandernagore, E.I.R.
7-3-27	R	Stagg , M., MAJOR, R.E., O.B.E., <i>Master, H.M.'s Mint</i> . Strand Road, Calcutta.
7-3-23	F	Stamp , L. DUDLEY, B.A., D.SC. University of London, London School of Economics, Houghton Street, London, W.C. 2.
6-6-27	R	Staples , EDWARD HENRY, <i>Broker</i> . 3, Auckland Place, Calcutta.
4-1-26	R	Stapleton , GRACE (MISS), M.D., B.S. (LONDON), <i>Superintendent</i> . Dufferin Hospital, Calcutta.
28-9-04	L	*Stapleton , HENRY ERNEST, M.A., B.SC., I.E.S., F.A.S.B. <i>Director of Public Instruction, Bengal</i> . 8, Galstaun Mansions, Calcutta.
7-12-25	A	Stark , LEONARDUS, <i>Banker</i> . c/o Netherlands India Commercial Bank, Dalhousie Square, Calcutta.
5-11-28	N	Statham , R. M., <i>Indian Educational Service, Secretary, Education Committee of the Indian Statutory Commission</i> . Madras Club, Madras.
6-5-25	R	Staub , MAX, <i>Consul for Switzerland</i> . 100, Clive Street, Calcutta.

Date of Election.		
1-8-23	A	Stow, SIR ALEXANDER MONTAGU, K.C.I.E., O.B.E., M.A. (CANFAB.), I.C.S., <i>Chief Commissioner</i> . Delhi.
1-11-22	R	Strickland-Anderson, (Mrs.). 1, Alipur Park, Calcutta.
5-6-07	R	*Suhrawardy, ABDULLAH AL-MA'MUN, IFTIKHARUL MILLAT, M.A., <i>Barrister-at-Law</i> , D.LITT., LL.D., F.A.S.B. 56, Mirzapur Street, Calcutta.
4-4-27	R	Suhrawardy, SIR Z. R. Z., KT., <i>Late Judge, High Court</i> . 61, Ripon Street, Calcutta.
3-3-20	N	Sundararaj, BUNGURU, M.A., PH.D., <i>Director of Fisheries</i> . Madras.
4-1-26	R	Sur, S. N., M.B., D.P.H., D.T.M., <i>Assistant Director of Public Health</i> . Writers' Buildings, Calcutta.
4-3-29	R	Tagore, PRAFULLA NATH, <i>Zemindar and Landholder</i> . 1, Darpanarain Tagore Street, Calcutta.
2-7-28	R	Tagore, RANENDRA MOHON, <i>Zemindar</i> . 6, Alipore Park Road East, Calcutta.
6-4-98	R	Tagore, SIR PRADYOT COOMAR, KT., MAHARAJA BAHADUR. Pathuriaghatta, Calcutta.
6-7-04	A	Talbot, WALTER STANLEY, C.I.E., I.C.S. (RETIRED). Glenhurst Esher, Surrey, England.
1-4-25	R	Taraporewala, IRACH J. S., B.A., PH.D., <i>Barrister-at-Law, Professor of Comparative Philology, University of Calcutta</i> . 77-9, Dharamtola Street, Calcutta.
7-11-27	R	Tarkatirtha, BIMALANANDA, <i>Kabiraj, Pundiibhusan, Byakaranatirtha</i> . 90/3, Grey Street, Calcutta.
31-8-93	L	Tate, GEORGE PASSMAN. 56, Cantonment, Bareilly, U.P.
5-6-78	F	*Temple, SIR RICHARD CARNAC, BART., C.B., C.I.E., F.B.A., F.S.A., F.A.S.B., <i>Formerly Lieutenant-Colonel, Indian Army</i> . c/o Lloyds Bank, Ltd., Cox's and King's Branch, 6, Pall Mall, London, S.W.
2-12-29	R	Thomas, H. W., F.C.S., M.P.S., <i>Senior Partner and Chairman of the Managing Directors, Messrs. Smith Stanistreet & Co. Stanistreet House, 18, Convent Road, Entally, Calcutta</i> .
4-8-09	N	Thompson, SIR JOHN PERRONET, K.C.I.E., C.S.I., M.A., I.C.S., <i>Chief Secretary, Govt. of the Punjab</i> . United Service Club, Simla.
1-6-04	L	*Tipper, GEORGE HOWLETT, M.A., F.G.S., M.INST.M.M., F.A.S.B. "The Laurels", Glebe Road, Cambridge, England.
4-3-29	N	Titus, REV. MURRAY T., PH.D., D.D., <i>Missionary of the Methodist Episcopal Church</i> . Budaun, U.P.
4-3-29	N	Travers, WALTER LANCLOT, C.I.E., O.B.E., M.L.C., <i>Tea Planter, Baradighi Tea Estate</i> . Baradighi P.O., B.D.R., Jalpaiguri.
5-12-27	N	Tritton, ARTHUR STANLEY, M.A., D.LITT, <i>Professor</i> . Muslim University, Aligarh, U.P.
7-5-28	N	Tucci, GIUSEPPE, PH.D., <i>Professor of Religions and Philosophy of India and the Far East. University of Rome</i> . c/o The Italian Consul, 9, Stephen Court, 18/B, Park Street, Calcutta.
5-7-26	F	Tyson, JOHN DAWSON, I.C.S. <i>Private Secretary to H.E. The Governor of Bengal</i> . Government House, Calcutta.
6-5-25	R	Ukil, AMULYA CHANDRA, M.B. (CAL.), <i>Professor of Bacteriology, National Medical Institute, and Assistant Director, Clinical Research Association</i> . 6/1, Kanklia Road, Ballygunge, Calcutta.

Date of Election.		
6-8-28	R	Urchs, OSWALD, M.D. c/o Messrs. Haverro Trading Co., Ltd., 15, Clive Street (Post Box 2122), Calcutta.
7-3-27	R	Urquhart, REV. W. S., M.A., D.D., D.LITT., <i>Principal, Scottish Churches College.</i> 3 & 4, Cornwallis Square, Calcutta.
5-11-24	R	Vaile, MAURICE ARTHUR STUART, <i>Exchange Broker, Messrs. Thomas Seth Apar & Co.</i> 8, Clive Street, Calcutta.
4-7-27	A	Vance, R. L., M.B., MAJOR, <i>Indian Medical Service.</i> Gyantse, Tibet.
6-7-25	N	Varma, SOHAN LAL, <i>Honorary Magistrate, Banking and Zemindari.</i> Laharpur, Sitapur District.
5-7-05	R	Vidyabhusana, AMULYA CHARAN. 28A, Telepara Lane, Calcutta.
6-8-28	R	Vijver, RICHARD HUBERTUS VAN DE, <i>Merchant.</i> 8, Lee Road, Hastings, Calcutta.
1-2-26	N	Viswanath, B., <i>Fellow, Chemical Society of London; Fellow, Chemical Society of India; Officiating Government Agricultural Chemist.</i> Lawley Road, Coimbatore.
6-3-01	L	*Vogel, JEAN PHILIPPE, LITT.D., F.A.S.B. The University, Lieden, Holland.
27-9-94	L	Vost, WILLIAM, LT.-COL., I.M.S. Leicester Lodge 1, Medina Villas, Hove, Sussex, England.
7-11-27	N	Vyasa, PUNDIT GAURI SANKAR PRASAD, <i>Head Master, M. E. School.</i> Indargarh Raj.
6-5-25	R	Wadia, D. N., M.A., B.SC., F.R.G.S., F.G.S., <i>Geological Survey of India.</i> Indian Museum, Calcutta.
5-3-28	N	Waight, HARRY GEORGE, B.A. (OXON and LOND.), F.R.G.S., I.C.S. District Judge, Jalpaiguri.
7-3-27	A	Ward, DOROTHY (MRS.). c/o J. Dickinson & Co., Ltd., P.O. Box No. 45, Calcutta.
5-3-28	R	Watling, R. G., <i>Indian Police (Railway Police), E. I. Ry.</i> 5, Strand Road, Howrah.
2-1-28	N	Wats, R. C., CAPTAIN, M.D., D.P.H., D.T.M., I.M.S. Mhow, Indore, C.I.
2-5-27	R	Watson, ALFRED HENRY, <i>Journalist.</i> c/o The "Statesman," Calcutta.
1-11-26	R	Westcott, FOSS, THE MOST REVEREND, D.D. (CANTAB.), HONORARY D.D. (OXON), <i>Lord Bishop of Calcutta and Metropolitan of India, Burma and Ceylon.</i> Bishop's House, 51, Chowringhee, Calcutta.
19-9-06	L	Whitehead, RICHARD BERTRAM, I.C.S. (RETD.). 30, Millington Road, Cambridge, England.
6-5-29	N	Williams, HENRY FRENCH FULFORD, M.A., CLARE COLLEGE (CAMB.), <i>Chaplain.</i> Shillong, Assam.
6-2-28	N	Williams, T. TALIESIN, M.A., B.SC., <i>Principal, Rajshahi College.</i> Rajshahi.
6-12-26	F	Winfield, WALTER WARREN, B.A., B.D., <i>Missionary.</i> c/o Baptist Missionary Society, 19, Furnival Street, London, E.C. 4, England.
7-3-06	L	*Woolner, ALFRED COOPER, C.I.E., M.A., F.A.S.B. 53, Lawrence Road, Lahore.
1-4-08	R	Wordsworth, WILLIAM CHRISTOPHER, M.A., I.E.S. (RETD.). c/o The "Statesman", 6, Chowringhee, Calcutta.
2-1-28	A	Wright, GERTRUDE MARIAM (MISS). <i>Indian Educational Service, Principal, Bethune College.</i> 181, Cornwallis Street, Calcutta.

Date of Election.		
7-3-27	R	Wright, FREDERIC MATTLAND , <i>Broker</i> . 2-5, Lansdowne Road, Calcutta.
5-2-19	N	Yazdani, GHULAM, M.A. <i>Archæological Survey</i> , Hyderabad, Deccan.
6-8-28	R	Young, REV. ARTHUR WILLIFER , <i>Secretary, British and Foreign Bible Society</i> . 23, Chowringhee, Calcutta.
2-4-28	R	Zachariah, K., M.A. (OXON) , <i>I.E.S., Professor of History, Presidency College</i> . 5, Store Road, Calcutta.

ORDINARY MEMBERS.

(Chronological.)

1878.				1901.			
June	5.	Temple, Sir R. C.		Mar.	6.	Khan, H. R.	
1880.				"	"	Vogel, J. P.	30
April	7.	Rai, B. C.		June	5.	Mann, H. H.	
1884.				Dec.	4.	Ross, Sir Edward D.	
Sept.	3.	Miles, W. H.		1902.			
Nov.	5.	Middlemiss, C. S.		Feb.	5.	Shyam Lal.	
1885.				May	7.	Sen, J. N.	
5 Feb.	4.	Shastri, Haraprasad		July	2.	Doxey, F.	35
1886.				1904.			
Mar.	3.	Mehta, R. D.		June	1.	Pilgrim, G. E.	
1887.				"	"	Tipper, G. H.	
Aug.	25.	Criper, W. R.		July	6.	Talbot, W. S.	
1888.				Aug.	3.	Fermor, L. L.	
June	6.	Pennell, A. P.		"	"	Stapleton, H. E.	40
1889.				1905.			
Mar.	6.	La Touche, T. H. D.		Mar.	1.	Banerji, M.	
10 Nov.	6.	Phillott, D. C.		May	3.	Graves, H. G.	
1890.				July	5.	Ghosh, A. C.	
Mar.	5.	Ray, Sir Prafulla C.		Aug.	2.	McCay, D.	
1892.				1906.			
Jan.	11.	Maclagan, Sir Edward D.		Jan.	3.	Chapman, J. A.	45
Feb.	1.	Bodding, P. O.		Mar.	7.	Nahar, P. C.	
1893.				"	"	Woolner, A. C.	
Aug.	31.	Tate, G. Passman		June	6.	Mitra, M. N.	
15 Sept.	28.	Chaudhuri, B. L.		Sept.	19.	Whitehead, R. B.	
1894.				Oct.	31.	Finlow, R. S.	50
Feb.	7.	Singh, H.H. Vishwa Nath		Dec.	5.	Mahalanobis, S. C.	
Sept.	27.	Vost, W.		1907.			
1895.				Jan.	2.	Banerji, R. D.	
Mar.	6.	Bose, Sir Jagadis C.		June	5.	Suhrawardy, A. A.	
July	3.	Beatson-Bell, Sir Nicholas D.		July	3.	Brown, J. C.	
20 Sept.	19.	De, K. C.		"	"	Christie, W. A. K.	55
1896.				Aug.	7.	Haines, H. H.	
Jan.	8.	Burn, Sir Richard		1908.			
1897.				Jan.	1.	Brahmachari, U. N.	
Dec.	1.	Seth, M. J.		Feb.	5.	Mukhopadhyaya, G. N.	
1898.				April	1.	Wordsworth, W. C.	
Jan.	5.	Dods, W. K.		Nov.	4.	Bhattacharji, B.	60
April	6.	Tagore, Sir Pradyot C.		1909.			
25 May	4.	Mookerjee, Sir R. N.		Jan.	6.	Shirreff, A. G.	
1899.				Mar.	3.	Chakravarti, N.	
Aug.	29.	Singh, Sir Prabhu Narain		"	"	Sarvadhikary, Sir D. P.	
Sept.	29.	Mukerjee, J. N.		April	7.	Bentley, C. A.	
1900.				"	"	Singh, P.	65
Dec.	5.	Grieve, J. W. A.		July	7.	Bazaz, R. K.	
				"	"	Bhattacharji, S. N.	
				Aug.	4.	Thompson, Sir J. P.	
				Oct.	6.	Brown, P.	

Chronological List of Ordinary Members.

cxlv

70	Oct.	6.	Brühl, P.	
	"	7.	Gangoli, O. C.	
	Nov.	3.	Christophers, S. R.	
1910.				
	May	4.	Dhavle, S. B.	
	"	"	Kemp, S. W.	
75	July	6.	Botham, A. W.	
	Sept.	7.	Gravely, F. H.	
	"	"	Ray, S. K.	
1911.				
	Feb.	1.	Insch, J.	
	"	"	Law, N. N.	
80	Mar.	1.	Mahtab, Sir Bijay Chand	
	May	3.	Lomax, C. E.	
	June	7.	Chatterjee, K. K.	
	"	"	Hosain, M. H.	
	July	5.	Sewell, R. B. S.	
85	Nov.	1.	Ahmed, K.	
	"	"	Esch, V. J.	
1912.				
	Jan.	10.	Kazim Shirazi, A. M.	
	May	1.	Harley, A. H.	
	June	5.	Misra, C.	
90	July	3.	Andrews, E. A.	
	"	"	Bomford, T. L.	
	Sept.	4.	Ghosh, T.	
	"	"	Singhi, B. S.	
1913.				
	Mar.	5.	Simonsen, J. L.	
95	April	2.	Calder, C. C.	
	June	4.	Majumdar, R. C.	
	July	2.	Sinha, R.	
	Nov.	5.	Fox, C. S.	
1914.				
	Mar.	4.	Bacot, J.	
100	April	1.	Chaudhuri, G. D.	
	July	1.	Law, S. C.	
	Aug.	5.	Law, B. C.	
1915.				
	Feb.	3.	Khan, H. A. A.	
105	April	7.	Belvalkar, S. K.	
	"	"	Ohtani, Count K.	
	Aug.	4.	Gurner, C. W.	
	Sept.	1.	Cleghorn, M. L. W.	
	"	"	Das-Gupta, H. C.	
	Oct.	27.	Chatterjee, Sir A. C.	
1916.				
110	Feb.	2.	Majumdar, N. K.	
	June	7.	Mahajan, S. P.	
	July	5.	Sarkar, G.	
1917.				
	April	4.	Awati, P. R.	
	June	6.	Deb, H. K.	

June	6.	Aiyangar, K. V. R.	115
Aug.	1.	Bhandarkar, D. R.	
1918.			
Feb.	6.	Banerji, N. N.	
"	"	Ghosh, E. N.	
"	"	Manen, Johan van	
"	"	Singh, B. M.	120
April	3.	Das, J. R.	
"	"	Prashad, B.	
"	"	Sinha, B. N.	
July	3.	Roy, B. C.	
"	"	Basu, C. C.	125
Aug.	7.	Maitra, J. N.	
Sept.	25.	Narayan, V. N.	
1919.			
Feb.	5.	Ray, S.	
"	"	Yazdani, G.	
Mar.	5.	Gupta, S. P.	130
April	2.	Bal, S. N.	
"	"	Friel, R.	
June	4.	Matthai, G.	
Nov.	5.	Hemraj, R.	
"	"	Misra, P. N.	135
"	"	Pascoe, Sir E. H.	
1920.			
Mar.	3.	Mahalanobis, P. C.	
"	"	Sundara Raj, B.	
"	"	Raye, N. N.	
April	7.	Dutt, K. K.	140
May	5.	Ghosh, S. N.	
June	2.	Majumdar, N. G.	
"	"	Skinner, S. A.	
July	7.	Knowles, R.	
"	"	Roy-Chaudhuri, H. C.	145
Aug.	4.	Dikshit, K. N.	
"	"	Martin, O.	
Sept.	1.	Chakladar, H. C.	
"	"	Chanda, R.	
"	"	Chatterjee, N. C.	150
Dec.	1.	Connor, Sir F. P.	
"	"	Akbar Khan, M.	
1921.			
Jan.	5.	Ray, J.	
Feb.	2.	Jain, Chhote Lall	
"	"	Mukerjee, R.	155
"	"	Mookerjee, S. C.	
Mar.	2.	Acton, H. W.	
"	"	Agharkar, S. P.	
May	4.	Barnardo, F. A. F.	
June	1.	Muzamilullah Khan, 160 Mohammad	
Sept.	7.	Deb, P. K.	
"	"	Roy, H. C.	
Nov.	2.	Hora, S. L.	
Dec.	7.	Barua, B. M.	

	1922.		
165	Feb.	1.	Bhattacharya, V. S.
	"	"	Chopra, R. N.
	"	"	Raman, Sir C. V.
	April	5.	Abdul Ali, A. F. M.
	"	"	Banerjee, S.
170	"	"	Bose, J. C.
	June	"	Bhattacharya, S. P.
	Sept.	6.	Das-Gupta, S. N.
	Nov.	1.	Strickland-Anderson, Mrs.
	"	"	Sarkar, S. C.
175	Dec.	6.	Blackett, Sir Basil P.

	1923.		
	Feb.	7.	Jinavijayaji, Muni
	"	"	Shanks, G.
	Mar.	7.	Gupta, N.
	"	"	Labey, G. T.
180	"	"	Stamp, L. D.
	April	4.	Alker, A.
	May	2.	Collenberg, Baron H. R. von
	"	"	Harnett, W. L.
	"	"	Möller, H. P.
185	"	"	Shebbeare, E. O.
	June	6.	Bhanot, K. D.
	"	"	Howard, A.
	"	"	Hutton, J. H.
	"	"	Ottens, N.
190	Aug.	1.	Biswas, K. P.
	"	"	Stow, Sir A. M.
	Dec.	5.	Chopra, B. N.
	"	"	Meggitt, F. J.
	"	"	Barwell, N. F.
195	"	"	Jackson, P. S.
	"	"	Korke, V. T.
	"	"	Sen, H. H. Lakshman
	"	"	Pande, S. B.

April	2.	De, F. L.	
"	"	Richards, F. J.	
"	"	Haq, M.	220
"	"	Mitra, J. C.	
"	"	Ghose, Sir C. C.	
May	7.	Rose, G. F.	
"	"	Bhattacharya, B.	
June	4.	Cooper, H.	225
July	2.	Ray, A. C.	
"	"	Ghose, B. B.	
"	"	Browne, L. E.	
"	"	Iyengar, M. O. P.	
"	"	Mookerjee, S. P.	230
"	"	Ray, B. C.	
Aug.	6.	Chatterji, S. K.	
"	"	Nyss, Wm. B. S.	
"	"	Moloney, W. J.	
"	"	Roy-Chowdhury, B. K.	235
"	"	Davies, L. M.	
"	27.	Chattopadhyay, K. P.	
"	"	Baidil, A. M.	
"	"	MacGregor, A. D.	
Sept.	24.	Sahni, B.	240
"	"	Mookerji, B. N.	
"	"	Asaduzzaman.	
Nov.	5.	Vaile, M. A. S.	
"	"	Kapur, S.	
Dec.	3.	Siddiqi, A.	245
"	"	Das, S. N.	
"	"	Mookerjee, J. N.	
"	"	Newman, Chas. F.	
"	"	Rao, H. S.	
"	"	Pushong, E. S.	250
"	"	Rogers, T. E.	
"	"	Basu, J. N.	
"	"	Ghose, S. C.	
"	"	Sarkar, C. K.	
"	"	Hendry, C. A.	255
"	"	Roerich, G. N.	
"	"	Sen, H. K.	

	1924.		
	Feb.	6.	Mahindra, K. C.
200	Mar.	5.	Banerjee, P. N.
	"	"	Browne, H.
	"	"	Kanjilal M. N.
	"	"	Mukerji, S.
	"	"	Martin, T. L.
205	"	"	Mitter, Sir P. C.
	"	"	Mitter, Sir B. C.
	"	"	Mitter, Sir B. L.
	"	"	Mitter, D. N.
	"	"	Mukherjee, N. N.
210	"	"	McPherson, J.
	"	"	Chatterji, M. M.
	"	"	Sircar, N. N.
	"	"	Sircar, Sir N. R.
	April	2.	Bahl, K. N.
215	"	"	Das, B. M.
	"	"	Ghose, K.
	"	"	Judah, N. J.

	1925.		
Jan.	7.	Banerjee, M. N.	
Feb.	4.	Bhor, S. C.	
"	"	Dutt, K. C.	260
"	"	Guha, B. S.	
"	"	Menon, K. R.	
Mar.	4.	Benthall, E. C.	
"	"	Bhatnagar, J. L.	
"	"	Buyers, W. A.	265
"	"	Chaudhuri, J.	
"	"	Das, A. N.	
"	"	Deb, Kshitindra	
"	"	Hossain, M. B.	
"	"	Mitter, P. C.	270
"	"	Pochhammer, W. von	
"	"	Poddar, H. P.	
"	"	Sinha, P. C.	
April	1.	Banerjee, A. C.	275
"	"	Perier, F.	

	April 1.	Hobbs, H.		Feb. 1.	Setna, S. B.	
	" "	Mohomed, I. A.		" "	Viswanath, B.	335
	" "	Laden La, S. W.		" "	Chaudhuri, H.	
	" "	Oaten, E. F.		" "	Kashyap, S. R.	
280	" "	Sidiq, H. S. M.		" "	Ghuznavi, Sir A. K.	
	" "	Sen, B. C.		" "	Khaitan, D. P.	
	" "	Taraporewala, I. J. S.		" "	Hingston, H.	340
	May 6.	Abbasi, M. A.		" "	Harris, H. G.	
	" "	Baral, G. C.		" "	Ghuznavi, A. H.	
285	" "	Batra, H. L.		" "	Khambata, R. B.	
	" "	Bose, H. M.		Mar. 1.	Bannerjee, W. C.	
	" "	Jatia, Sir O. M.		" "	McKay, J. W.	345
	" "	Khanna, V. L.		" "	Mookerjee, S. C.	
	" "	Koester, Hans		" "	Snaith, J. F.	
290	" "	Kolah, K. S.		" "	Gupta, D. N.	
	" "	Rao, M. V.		" "	Mukherjee, A. N.	
	" "	Staub, Max.		" "	Datta, H. N.	350
	" "	Ukil, A. C.		" "	Basu, N. K.	
	" "	Wadia, D. N.		" "	Kramrisch, Stella.	
295	June 3.	Datta, S. K.		" "	Bagnall, J. F.	
	" "	Lal, B. B.		April 5.	Gupta, S. N.	355
	" "	Musa, M.		" "	Senior-White, R.	
	July 6.	Bose, M. M.		" "	Ghose, B. C.	
	" "	Varma, S. L.		" "	Parker, R. H.	
300	Aug. 3.	Chhibber, H. L.		" "	Bhatia, M. L.	
	" "	Coyajee, Sir J. C.		" "	Mitter, K. N.	
	" "	Pruthi, H. S.		" "	Jones, T.	360
	" "	Reuben, D. E.		" "	Mitter, K. K.	
	Nov. 2.	Acharya, P.		May 3.	Bhagwant Rai.	
305	" "	Bradshaw, E. J.		June 7.	De, P. N.	
	" "	Chattopādhyāya, K. C.		" "	Lemmon, R. D.	
	" "	Crookshank, H.		July 5.	Husain, M. M.	365
	" "	Gee, E. R.		" "	Mukhopadhyaya, P. K.	
	" "	Kimura, R.		" "	Tyson, J. D.	
310	" "	Mirza, M. B.		" "	Lyne, H. W.	
	" "	Ormond, E. C.		Aug. 2.	Calder, N. D.	370
	" "	Sanaullah, M.		" "	Oak, M. R.	
	" "	Sharif, M.		" "	Sohoni, V. V.	
	Dec. 7.	Afzal, S. M.		" "	Majumdar, D. N.	
315	" "	Derviche-Jones, A.		" "	Mukherjee, J. N.	
	" "	Narayanaswami, V.		" "	Khettry, B.	
	" "	Stark, L.		" "	James, J. L.	375
				" "	De, B.	
	1926.			Nov. 1.	Jameson, T. B.	
	Jan. 4.	Becker, J. N.		" "	Collet, A. L.	
	" "	Brahmachari, I. B.		" "	Modi, J. R. K.	380
320	" "	Chatterji, K. C.		" "	Westcott, F.	
	" "	Fleming, Andrew		" "	Barhut, T. K.	
	" "	Gaffar, Abdul		" "	Pugh, L. P. E.	
	" "	Hubert, Otto		" "	Ramanujaswami, P. V.	
	" "	Murray, H.		" "	Mills, J. P.	385
325	" "	Shortt, H. E.		" "	Rao, W. L.	
	" "	Sinton, J. A.		" "	Galstaun, S.	
	" "	Stapleton, G. (Miss)		" "	Chokhani, S.	
	" "	Sur, S. N.		" "	Bagchi, P. C.	
	Feb. 1.	Edwards, C. A. H.		" "	Brahmachari, B. B.	390
330	" "	Ruthnaswamy, M.		" "	Aiyangar, S. K.	
	" "	Meston, Lord		" "	Singh, B. R.	
	" "	Rao, T. R.		" "	Guha, S.	
	" "	Husain, M. A.		" "	Banerjee, S. N.	
				" "	Ghosh, B. K.	

395	Dec.	6.	Nag, K.
	"	"	Singh, R.
	"	"	Rau, A. S.
	"	"	Winfield, W. W.
1927.			
	Jan.	3.	Chakravarty, N.
400	"	"	Bivar, H. G. S.
	"	"	De, S. C.
	"	"	Mohammed G.
	Feb.	7.	Imam, A. M. S. H.
	"	"	Chatterjee, A.
405	"	"	Bose, D. M.
	"	"	Ghosh, J. C.
	"	"	Captain, D. M.
	"	"	Bhattacharya, D. R.
	"	"	Mukherjee, H. N.
410	Mar.	7.	Hopkinson, A. J.
	"	"	Urquhart, W. S.
	"	"	Sarma, Sir B. N.
	"	"	Bake, A. A.
	"	"	Rankin, Sir G.
415	"	"	Dikkers, F. G.
	"	"	Stagg, M.
	"	"	Ward, Mrs. D.
	"	"	French, J. C.
	"	"	Ghosh, P. N.
420	"	"	Abdul Kadir, A. F. M.
	"	"	Fukushima, N.
	"	"	Wright, F. M.
	April	4.	Helland, B. A.
	"	"	Suhrawardy, Sir Z. R. Z.
425	"	"	Dewick, E. C.
	"	"	Bridge, P. G.
	May	2.	Feegrade, E. S.
	"	"	Hürlimann, M.
	"	"	Clegg, E. L. G.
430	"	"	Watson, A. H.
	June	6.	Nandi, Maharaja S. C.
	"	"	Jain, R.
	"	"	Staples, E. H.
	"	"	Sinha, S. P.
435	"	"	James, F. E.
	July	4.	Chatterjee, P.
	"	"	Chakravarti, C.
	"	"	Maitra, J. N.
	"	"	Vance, R. L.
440	Nov.	7.	Tarkatirtha, B.
	"	"	Mukherji, D.
	"	"	Fitzgerald, T. J.
	"	"	Brahmachary, S. C.
	"	"	De, P. C.
445	"	"	Vyasa, G. S. P.
	"	"	Ghosh, D. N.
	Dec.	5.	Tritton, A. S.
	"	"	Namgyal, H.H. Sir
	"	"	Tashi
	"	"	Dechhen, H.H. Kun-
	"	"	zang
450	"	"	Chowdhury, C.
	"	"	Peddie, J.

	Dec.	5.	Ghosh, K.
	"	"	Mukerjee, S. K.
1928.			
	Jan.	2.	Basu, N. M.
	"	"	Dastidar, N. K. R.
	"	"	Wright, Miss G. M.
	"	"	de Mello, F.
	"	"	Puri, I. M.
	"	"	Wats, R. C.
	"	"	Row, R.
	"	"	Dutt, P. C.
	"	"	Chaube, R. K.
	"	"	Mehta, M. H.
	"	"	Imam, S. H.
	Feb.	6.	Basu, S. K.
	"	"	Sinha, S. C.
	"	"	Kewal, G. S.
	"	"	Khan, M. A. R.
	"	"	Ezra, Sir D.
	"	"	Majumdar, G. P.
	"	"	Reneman, Nico
	"	"	Evans, F. L.
	"	"	Mukerji, M. N.
	"	"	Rai, L. N.
	"	"	Williams, T. T.
	"	"	Mallik, S. N.
	"	"	Rafique, M.
	"	"	Shumsher, Sir Kaiser
	"	"	Piddington, A. B.
	Mar.	5.	Waight, H. G.
	"	"	Plessen, Baron L.
	"	"	Melhuish, R. A.
	"	"	Goopu, D. N.
	"	"	Das, Kedarnath
	"	"	Hawes, G. L.
	"	"	Fullerton, G. M.
	"	"	Watling, R. G.
	"	"	Neogi, P.
	"	"	Biswas, C. C
	"	"	Shaha, B.
	"	"	Eberl, Otto
	April	2.	Shaw, E. B.
	"	"	Sen, B. K.
	"	"	Hargopal.
	"	"	Majumdar, A. R.
	"	"	Mitra, J. N.
	"	"	Zachariah, K.
	"	"	Roy, S. K.
	"	"	Banerjee, S.
	"	"	Mullick, K. C.
	"	"	Mitra, D. N.
	"	"	Bhattacharjee, N. C.
	"	"	Kumar, K. K.
	"	"	Chowdhury, Rai J.
	"	"	Harris, L. E.
	"	"	Mookerjee, B.
	May	7.	Chatterji, K. N.
	"	"	Jardine, A.
	"	"	Chatterjee, Sir N. R.
	"	"	Mookerjee, K. B.

Chronological List of Ordinary Members.

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May.	7.	Tucci, G.	Feb.	4.	Jenkins, W. A.	
"	"	Murray, E. F. O.	"	"	Dev, Raja R.	
"	"	Moledina, M. H.	Mar.	4.	Agate, P. N.	585
"	"	Chowdhury, A. N.	"	"	Titus, M. T.	
515	"	Gupta, J. N.	"	"	Iyer, M. S.	
"	"	Basu, N.	"	"	Travers, W. L.	
"	"	Sastri, H.	"	"	Tagore, P. N.	
"	"	Ghosal, U. N.	"	"	Goil, D. P.	570
"	"	Mallik, S. C.	"	"	Deb, P. N.	
520	"	Basak, S. C.	"	"	Ahmad, D.	
"	"	Lord Sinha of Raipur	"	"	Mitter, H. K.	
"	"	Saha, M. N.	"	"	De, J. C.	
June	4.	Bhadra, S. N.	"	"	Basu, B. K.	575
"	"	Hobart, R. C.	"	"	Das, U. N.	
525	"	Narasimham, Y.	"	"	Lunan, A. G.	
"	"	Mukerji, M. N.	"	"	Mullick, P. N.	
"	"	Bhattachali, N. K.	"	"	Mitra, J. M.	
July	2.	Tagore, R. M.	"	"	Boral, A. P.	580
"	"	Roerich, N.	"	"	Ghose, D. P.	
530	"	Das, P. K.	April	1.	Asadullah, K. M.	
"	"	Hosain, Nawab Mush-	"	"	Rizvi, S. H. H.	
"	"	arruf	"	"	Bose, J. N.	
Aug.	6.	Jaitly, P. L.	"	"	Kolb, E. H.	585
"	"	Das, A.	"	"	Chatterjee, P. M.	
"	"	Urchs, O.	"	"	Ginwala, Sir P.	
535	"	Young, A. W.	"	"	Sen-Gupta, N. C.	
"	"	Mitra, S.	"	"	Sharma, S. R.	
"	"	Vijver, R. H. van de	May	6.	Williams, H. F. F.	590
"	"	Ghuznavi, I. S. K.	"	"	Sastri, D. S. B.	
"	"	Drummond, J. G.	"	"	Pawsey, C. R.	
540	"	Chatterjee, S. C.	"	"	Sanyal, S. C.	
"	"	Elberg, A. A. J. (Mrs.)	"	"	Aken, C. E. van.	
"	"	Heron, A. M.	"	"	Kapur, Dewan R. C.	595
Nov.	5.	Nag, (Miss) Shanti	June	3.	Sen, P. C.	
"	"	Olpadvala, E. S.	July	1.	Dunn, J. A.	
545	"	Bose Mullick, G. N.	"	"	Glass-Hooper, C. T.	
"	"	Ishaque, M.	"	"	Banerji, B. B.	600
"	"	Keable, G.	"	"	Mitra, S. L.	
"	"	Choprha, G.	Aug.	5.	Sommerfeld, A.	
"	"	Statham, R. M.	Nov.	4.	Berthoud, G. F.	
550	"	Dey, D.	"	"	Singh, J.	
"	"	Reinhart, W.	"	"	Mitra, M. N.	
"	"	Rahman, A. S. M. L.	"	"	Cohen, D. J.	605
"	"	Krishnan, M. S.	"	"	Cotter, G. de P.	
"	"	Galstaun, J. C.	"	"	Campbell, G. R.	
"	"		"	"	Parry, N. E.	
1929.			"	"	Jarvis, R. Y.	
555	Jan.	7. Basu, S. C.	"	"	Edwards, L. B.	610
"	"	MacLean, E. V.	"	"	Siddiqi, M. Z.	
"	"	Pillai, G. P.	"	"	Kurup, P. C. K.	
"	"	Campbell Forrester,	Dec.	2.	Jacob, J.	
"	"	Mrs. Florence.	"	"	Fisher, Bishop F. B.	615
"	"	Ghose, M. C.	"	"	Khan, M. R.	
560	Feb.	4. Narain, Hirde	"	"	Fawcus, L. R.	
"	"	de Gasparin, Edith	"	"	Thomas, H. W.	
"	"	Srimani, J.	"	"	Maynard, B. M.	

LIFE MEMBERS.

(Chronological.)

	4- 2-85	H. P. Shastri	6-10-09	P. J. Brühl (28 N.).	25
		(12 N.).	4- 5-10	S. B. Dhavle	
	3- 3-86	R. D. Mehta (89 R.).		(10 N.).	
	6- 6-88	A. P. Pennell (88 F.).	4- 5-10	S. W. Kemp (29 F.).	
	6- 3-89	T. H. D. La Touche	1- 2-11	Jas. Insch (28 R.)	
		(10 N.).	7- 6-11	M. Hidayat Hosain	
5	6-11-89	D. C. Phillott (10 F.).		(27 N.).	
	11- 1-93	Sir Edward D.	5- 7-11	R. B. S. Sewell	30
		Maclagan (94 R.).		(28 N.).	
	1- 2-93	P. O. Bodding	1-11-11	Kamaluddin Ahmad	
		(14 N.).		(24 N.).	
	31- 7-93	G. P. Tate (23 N.).	5- 3-13	J. L. Simonsen	
	27- 9-94	W. Vost (94 F.).		(19 N.).	
10	3- 7-95	Sir Nicholas D.	4- 3-14	J. Bacot (14 F.).	
		Beatson-Bell	5- 7-16	G. Sircar (29 N.).	
		(95 N.).	6- 2-18	E. N. Ghosh (25 R.).	35
	19- 9-95	K. C. De (26 R.).	6- 2-18	Johan van Manen	
	3- 5-98	Sir R. N. Mookerjee		(25 R.).	
		(29 R.).	3- 4-18	B. Prashad (29 R.)	
	5-12-00	J. W. A. Grieve	5-12-23	H. H. Lakshman Sen	
		(00 F.).		(24 N.).	
	6- 2-01	J. Ph. Vogel (25 F.).	7- 5-24	B. Bhattacharya	
15	2- 7-02	F. Doxey (28 R.).		(24 N.).	
	1- 6-04	G. H. Tipper (27 N.).	6- 8-24	L. M. Davies	40
	28- 9-04	H. E. Stapleton		(24 N.).	
		(26 R.).	3-12-24	G. Roerich (28 F.).	
	2- 8-05	D. McCay (29 F.).	6- 6-27	B. D. Jain (28 R.).	
	3- 1-06	J. A. Chapman	5-12-27	Chhajuram Chow-	
		(28 N.).		dhury (27 R.).	
20	7- 3-06	A. C. Woolner	5-12-27	H. H. Sir Tashi Nam-	
		(28 N.).		gyal (27 N.).	
	19- 7-06	R. B. Whitehead	5-12-27	H. H. Kunzang Dech-	45
		(26 N.).		hen (27 N.).	
	3- 7-07	J. Coggin Brown	6- 2-28	Sir D. Ezra (28 R.).	
		(28 N.).	6- 2-28	Sir Kaiser Shumsher	
	3- 7-07	W. A. K. Christie		(28 N.).	
		(29 N.).	2- 7-28	N. Roerich (28 F.).	
	1- 1-08	U. N. Brahmachari	5-11-28	W. Reinhart (28 F.).	
		(27 R.).			

SPECIAL HONORARY CENTENARY MEMBER.

Date of Election.	
15-1-84	A. H. SAYCE, <i>Professor of Assyriology, Queen's College.</i> Oxford, England.

ASSOCIATE MEMBERS.

Date of Election.	
2-12-85	* A. FÜHRER, <i>Professor of Sanskrit.</i> 5, Dorenbachstrasse, Binningen, Basel, Switzerland.
4-6-02	* A. H. FRANCKE, REV. c/o Universitäts Bibliothek, Dorotheenstr. 81, Berlin, N.W. 7.
7-12-10	* H. HOSTEN, REV., S.J. St. Joseph's College, Darjeeling.
1-2-22	† PIERZE JOHANS, REV., S.J., B.LITT. (OXON.), <i>Professor of Philosophy.</i> St. Xavier's College, Calcutta.
1-2-22	† ANANTAKRISHNA SASTRI, MAHAMAHOPADHYAYA. 57/1, Sreegopal Mullick Lane, Calcutta.
6-2-24	* W. IVANOW. c/o Asiatic Society of Bengal, 1, Park Street, Calcutta.
6-2-24	* KAMALAKRISHNA SMRITITIRTHA, MAHAMAHOPADHYAYA. Bhatpara, 24-Parganas.
1-2-26	DURGADAS MUKHERJEE, M.A., <i>Professor.</i> 35, Ballygunge Circular Road, Calcutta.
2-5-27	N. N. VASU, RAI SAHEB. 20, Visvakosh Lane, Baghbazar, Calcutta.
2-12-29	SARAT CHANDRA ROY, RAI BAHADUR, M.A., B.L. Church Road, Ranchi. 10

† Re-elected for a further period of five years on 7-3-1927 under Rule 2c.

* Re-elected for a further period of five years on 4-2-1929 under Rule 2c.

INSTITUTIONAL MEMBERS.

Date of Election.	
28-10-29	The Legatum Warnerianum (Oriental Department), University of Leyden, Leyden, Holland.
2-12-29	The Adyar Library, Adyar, Madras S.

ORDINARY FELLOWS.

Date of Election.	
2-2-10	Haraprasad Shastri, C.I.E., M.A., D.LITT.
2-2-10	T. H. D. La Touche, B.A., F.G.S.
2-2-10	D. C. Phillott, M.A., PH.D., M.R.A.S.
2-2-10	Sir Prafulla Chandra Ray, KT., C.I.E., M.A., D.SC.
2-2-10	Sir E. D. Ross, KT., C.I.E., PH.D.

	Date of Election.	
	7-2-12	Sir J. C. Bose, KT., C.S.I., C.I.E., M.A., D.SC., F.R.S.
	7-2-12	P. J. Brühl, I.S.O., F.G.S., PH.D., F.C.S.
	7-2-12	S. R. Christophers, C.I.E., O.B.E., I.M.S.
	7-2-12	C. S. Middlemiss, C.I.E., B.A., F.G.S., F.R.S.
10	5-2-13	J. Ph. Vogel, PH.D., LITT.D.
	5-2-13	S. W. Kemp, B.A., D.SC.
	3-2-15	G. H. Tipper, M.A., F.G.S., M.INST.M.M.
	3-2-15	H. H. Haines, C.I.E., F.C.H., F.L.S.
	2-2-16	Sir Richard Burn, KT., C.I.E., I.C.S.
15	2-2-16	L. L. Fermor, O.B.E., A.R.S.M., D.SC., F.G.S.
	7-2-17	F. H. Gravely, D.SC.
	6-2-18	J. L. Simonsen, D.SC., F.I.C.
	6-2-18	D. McCay, M.D., M.R.C.P., I.M.S.
	6-2-18	A. A. Suhrawardy, M.A., PH.D., D.LITT., LL.D.
20	5-2-19	J. Coggin Brown, O.B.E., M.I.M.E., F.G.S.
	5-2-19	W. A. K. Christie, B.SC., PH.D., M.INST.M.M.
	5-2-19	D. R. Bhandarkar, M.A., PH.D.
	5-2-19	R. B. Seymour Sewell, M.A., M.R.C.S., L.R.C.P., F.Z.S., I.M.S.
	2-2-21	U. N. Brahmachari, M.A., PH.D., M.D.
25	2-2-21	B. L. Chaudhuri, B.A., D.SC., F.L.S., F.R.S.E.
	1-2-22	Sir Edwin H. Pascoe, KT., M.A., D.SC., SC.D., F.G.S.
	1-2-22	Ramaprasad Chanda, B.A.
	7-2-23	G. N. Mukhopadhyaya, B.A., M.D.
	4-2-25	M. Hidayat Hosain, PH.D.
30	4-2-25	Guy E. Pilgrim, D.SC., F.G.S.
	4-2-25	Sir C. V. Raman, KT., M.A., D.SC., F.R.S.
	1-2-26	P. O. Bodding, M.A.
	7-2-27	R. Knowles, B.A., M.R.C.S., L.R.C.P., I.M.S.
	7-2-27	Johan van Manen, C.I.E.
35	7-2-27	B. Sahni, D.SC.
	7-2-27	A. C. Woolner, C.I.E., M.A.
	6-2-28	H. E. Stapleton, M.A., B.SC., I.E.S.
	6-2-28	B. Prashad, D.SC., F.Z.S., F.R.S.E.
	6-2-28	Sir R. C. Temple, Bart., C.B., C.I.E., F.B.A., F.S.A.
40	6-2-28	C. A. Bentley, M.B., D.P.H., D.T.M. & H.
	4-2-29	A. Howard, C.I.E., M.A.
	4-2-29	J. H. Hutton, C.I.E., I.C.S., M.A., D.SC.
	4-2-29	Sir Edward D. MacLagan, K.C.S.I., K.C.I.E.

HONORARY FELLOWS.

	Date of Election.	
	5-2-96	CHARLES ROCKWELL LANMAN. 9, Farrar Street, Cambridge, Massachusetts, U.S.A.
	2-3-04	SIR GEORGE ABRAHAM GRIERSON, K.C.I.E., O.M., PH.D., D.LITT., LL.D., F.B.A., I.C.S. (<i>retired</i>). Rathfarnham, Camberley, Surrey, England.
	6-9-11	ALFRED WILLIAM ALCOCK, C.I.E., M.B., LL.D., F.R.S. Heathlands, Belvedere, Kent, England.
	6-9-11	KAMAKHYANATH TARKAVAGISA, MAHAMAHOPADHYAYA. 111/4, Shambazar Street, Calcutta.
5	5-8-15	SIR JOSEPH JOHN THOMSON, KT., O.M., M.A., SC.D., D.SC., LL.D., PH.D., F.R.S. Trinity College, Cambridge, England.

Date of Election.	
6-12-16	G. A. BOULENGER, F.R.S., LL.D. Jardin Botanique du L'Etat, Brussels.
2-5-17	HERBERT ALLEN GILES, <i>Professor</i> . 10, Selwyn Gardens, Cambridge, England.
5-2-20	THE RIGHT HON'BLE SIR CHARLES ELIOT, K.C.M.G., C.B., M.A., LL.D., D.C.L. Beech Hill, Carleton, Skipton-in-Craven, England.
4-2-20	SYLVAIN LEVI. Collège de France, rue Guy-de-la-Brosse 9, Paris, Ve.
4-2-20	SIR AUREL STEIN, K.C.I.E., PH.D., D.LITT., D.SC., D.O.L., F.B.A. 10 Srinagar, Kashmir.
4-2-20	A. FOUCHER, D.LITT. Boulevard Raspail 286, Paris XVIIe.
4-2-20	SIR ARTHUR KEITH, M.D., F.R.C.S., LL.D., F.R.S. Royal College of Surgeons of England, Lincoln's Inn Fields, London, W.C. 2.
4-2-20	R. D. OLDHAM, F.R.S., F.G.S., F.R.G.S. 1, Broomfield Road, Kew, Surrey, England.
4-2-20	SIR DAVID PRAIN, KT., C.M.G., C.I.E., M.A., M.B., LL.D., F.R.S.E., F.L.S., F.R.S., F.Z.S., M.R.I.A. Royal Botanic Gardens, Kew, Surrey, England.
4-2-20	SIR JOSEPH LARMOR, KT., M.P., M.A., D.SC., LL.D., D.C.L., F.R.S., 15 F.R.A.S. St. John's College, Cambridge, England.
4-2-20	SIR JAMES FRAZER, KT., D.C.L., LL.D., LITT.D. Trinity College, Cambridge.
4-2-20	J. TAKAKUSU. Imperial University of Tokio, Japan.
2-3-21	F. W. THOMAS, C.I.E., M.A., PH.D., <i>Boden Professor of Sanskrit, University of Oxford</i> . 161, Woodstock Road, Oxford, England.
7-6-22	SIR THOMAS HOLLAND, K.C.S.I., K.C.I.E., D.SC., F.R.S. Imperial College of Science and Technology, South Kensington, London, S.W. 7.
7-6-22	SIR LEONARD ROGERS, KT., C.I.E., M.D., B.S., F.R.C.P., F.R.S., 20 I.M.S. 24, Cavendish Square, London, 4.
1-11-22	ARTHUR ANTHONY MACDONELL, M.A., PH.D., D.O.L., <i>Emeritus Professor of Sanskrit, University of Oxford</i> . Oxford, England.
7-1-25	STEN KONOW. Ethnographisk Museum, Oslo, Norway.
7-3-27	THE RT. HON'BLE THE EARL OF LYTTON, P.C., G.C.S.I., G.C.I.E. Knebworth, Herts, England.
4-7-27	C. SNOUCK HURGRONJE. Rapenburg 61, Leiden, Holland.
5-12-27	LT.-COL. SIR T. WOLSELEY HAIG, K.C.I.E., C.S.I., C.B.E., M.A., 25 C.M.G. 34, Gledstanes Road, West Kensington, London, W. 14.
2-12-29	SIR RAJENDRA NATH MOOKERJEE, K.C.I.E., K.C.V.O. 7, Harington Street, Calcutta.
2-12-29	DR. CHARLES J. H. NICOLLE, <i>Director</i> . Pasteur Institute, Tunis.

CHANGES IN MEMBERSHIP.

LIST OF MEMBERS WHO HAVE BEEN ABSENT FROM INDIA THREE YEARS AND UPWARDS.*

*Rule 40.—After the lapse of three years from the date of a member leaving India, if no intimation of his wishes shall, in the interval, have been received by the Society, his name shall be removed from the List of Members.

The following member is liable to removal from the next Member List of the Society under the operation of the above Rule:—

1. Wilhelm von Pochhammer. (1925.)

LOSS OF MEMBERS DURING 1929.

BY RETIREMENT.

Ordinary Members.

1. J. N. Lahiri. (1920.)
2. P. N. Mukherjee. (1924.)
3. J. P. Gangooly. (1928.)
4. C. J. Grimes. (1927.)
5. Sailendranath Chatterjee. (1924.)
6. J. W. D. Megaw. (1922.)
7. A. A. E. Baptist. (1926.)
8. Gautam Sondhi. (1926.)
9. E. B. Walton. (1925.)
10. H. H. Nomani. (1926.)
11. H. B. Steen. (1908.)
12. D. K. Das. (1927.)
13. M. Younus. (1926.)
14. R. K. S. Chetty. (1927.)
15. J. N. Kilner. (1909.)
16. Edwin Watson. (1928.)
17. P. L. Roy. (1924.)
18. George Varugis. (1925.)
19. H. Cecil Jones. (1908.)
20. Sarasi Lal Sarkar. (1928.)
21. D. H. Keelan. (1927.)
22. Nogendra Lal Dutta. (1928.)
23. Sir Mohd. Habibullah. (1925.)
24. H. A. Outhwaite. (1926.)
25. C. T. Barber. (1923.)
26. S. H. Lele. (1926.)
27. Syed Aulad Hasan. (1904.)
28. J. Cunningham. (1926.)
29. C. Bhaskaraiya. (1926.)
30. Mrs. J. B. Bathgate. (1926.)
31. W. I. Keir. (1920.)
32. Miss M. I. Bealey. (1928.)
33. S. K. Banerjee. (1926.)
34. E. H. V. Hodge. (1926.)
35. Sisir Kumar Maitra. (1918.)
36. Mrs. C. de Beauvoir Stocks. (1925.)
37. B. N. Ghose. (1929.)

BY DEATH.

Ordinary Members.

1. S. Sethu Rama Rao. (1926.)
2. J. C. Dutt. (1926.)
3. Saiyid Nawab Ali Chaudhury. (1914.)
4. B. Chakravarti. (1927.)
5. Amrita Lal Bose. (1898.)
6. Sir Rameshwar Singh. (1899.)
7. Bepin Behari Ghosh. (1928.)
8. Syed Abdul Latif. (1909.)
9. Sir Manindra Chandra Nandy. (1928.)
10. Herbert C. Robinson. (1918.)

Associate Member.

1. MM. Sadasiva Misra. (1929.)

Honorary Fellows.

1. Sir Edwin Ray Lankester. (1899.)
2. W. H. Perkin. (1922.)
3. Henry Beveridge. (1925.)

UNDER RULE 38.

1. Pramathanath Banerjee. (1919.)
2. Brij Narain. (1920.)
3. Syed Emdadul Haq. (1921.)
4. Taraprosanna Gupta. (1925.)
5. Deomitra Mishra. (1926.)
6. Syed Naseer Hossain Khayal. (1916.)
7. Ganganand Sinha. (1922.)
8. Parshotam Das Singhanian. (1925.)
9. S. Abdul Kader Surfraz (1919.)
10. P. Nandy. (1923.)
11. Hasan Suhrawardy. (1920.)
12. Mohd. Hamid. (1925.)
13. J. C. Manry. (1919.)

UNDER RULE 40.

1. The Earl of Ronaldshay. (1920.)
2. J. T. Rankin. (1905.)
3. W. G. L. Gilbert (1924.)
4. M. C. G. Young. (1906.)
5. G. L. Houstoun. (1873.)
6. R. C. James. (1925.)
7. T. H. Bishop. (1925.)
8. H. Fitzpatrick. (1924.)
9. Sir Ewart Greaves. (1924.)
10. S. E. Carritt. (1925.)

MEDALLISTS.

ELLIOTT GOLD MEDAL AND CASH.

RECIPIENTS.

1893	Chandra Kanta Basu.
1895	Yati Bhusana Bhaduri
1896	Jnan Saran Chakravarti.
1897	Sarasi Lal Sarkar.
1901	Sarasi Lal Sarkar.
1904	{ Sarasi Lal Sarkar.
	{ Surendra Nath Maitra.
1907	Akshoy Kumar Mazumdar.
1911	{ Jitendra Nath Rakshit.
	{ Jatindra Mohan Datta.
	{ Rasik Lal Datta.
1913	{ Saradakanta Ganguly.
	{ Nagendra Chandra Nag.
	{ Nilratan Dhar.
1918	Bibhutibhushan Dutta.
1919	Jnanendra Chandra Ghosh.
1922	Abani Bhusan Datta.
1923	Bhailal M. Amin.
1926	Bidhu Bhusan Ray.
1927	Kalipada Biswas.

BARCLAY MEMORIAL MEDAL.

RECIPIENTS.

1901	E. Ernest Green.
1903	Sir Ronald Ross, KT., K.C.B., C.I.E., K.C.M.G., M.R.C.S., F.R.C.S., D.P.H., LL.D., D.Sc., M.D., F.R.S.
1905	D. D. Cunningham, C.I.E., F.R.S.
1907	A. W. Alcock, C.I.E., M.B., LL.D., F.R.S.
1909	Sir David Prain, KT., C.I.E., C.M.G., M.A., M.B., LL.D., F.R.S.E., F.L.S., F.Z.S., M.R.I.A., F.R.S.
1911	Carl Diener.
1913	William Glen Liston, C.I.E., M.D., D.P.H.
1915	J. S. Gamble, C.I.E., M.A., F.R.S.
1917	H. H. Godwin-Austen, F.R.S., F.Z.S., F.R.G.S.
1919	N. Annandale, C.I.E., D.Sc., C.M.Z.S., F.L.S., F.R.S., F.A.S.B.
1921	Sir Leonard Rogers, KT., C.I.E., M.D., B.S., F.R.C.P., F.R.C.S., F.R.S.
1923	S. R. Christophers, C.I.E., O.B.E., M.B., I.M.S.
1925	J. Stephenson, C.I.E., B.Sc., M.B., CH.B., F.R.C.S., F.R.S.E., I.M.S.
1927	S. W. Kemp, B.A., D.Sc., F.A.S.B.
1929	Albert Howard, C.I.E., M.A., F.A.S.B.

SIR WILLIAM JONES MEMORIAL MEDAL.

RECIPIENT.

1927 Sir Malcolm Watson, Kt., LL.D. (Hon.), M.D., C.M., D.P.H.

ANNANDALE MEMORIAL MEDAL.

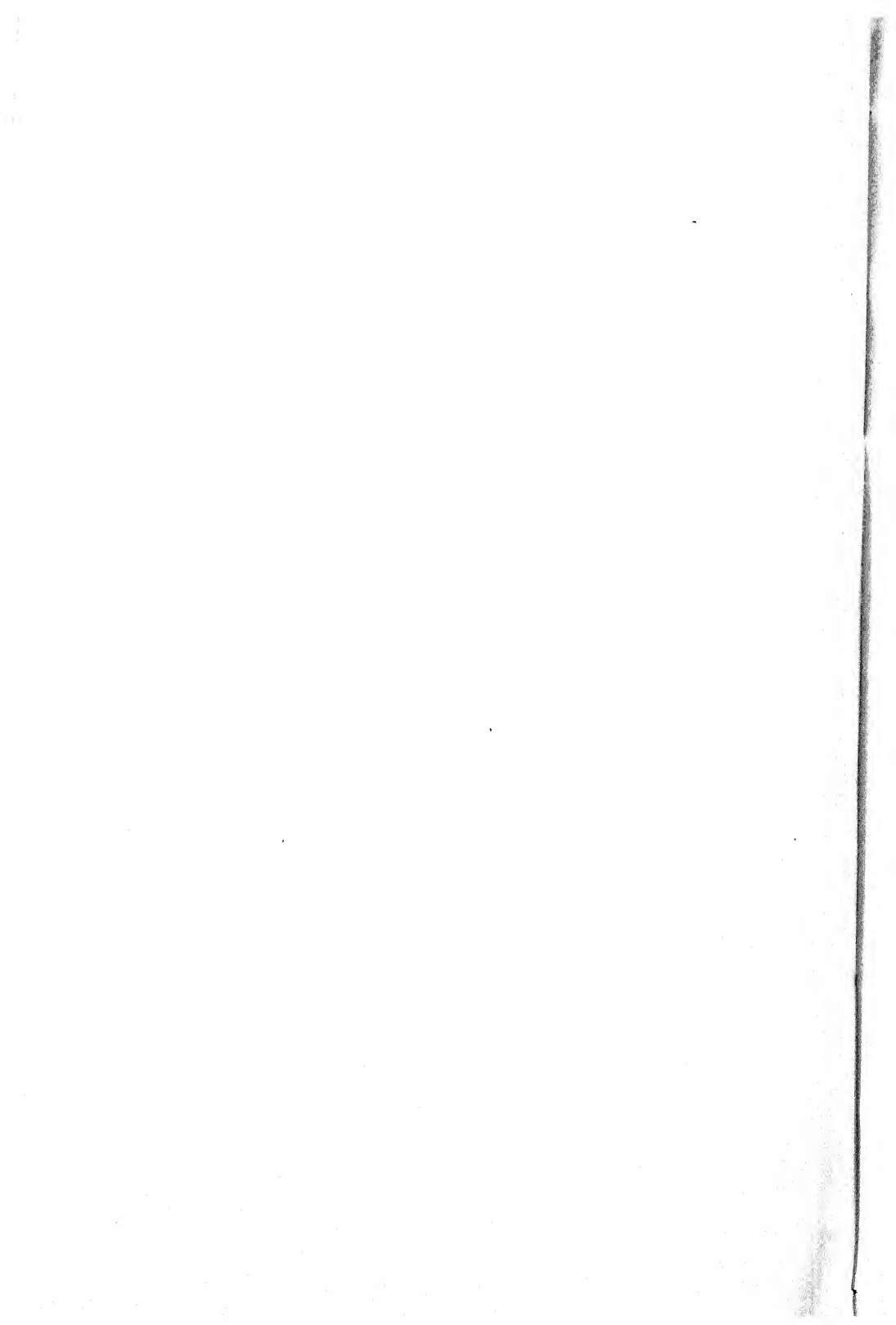
RECIPIENT.

1927 Fritz Sarasin.

JOY GOBIND LAW MEMORIAL MEDAL.

RECIPIENT.

1929 Max Weber.



PROCEEDINGS OF THE ORDINARY MONTHLY MEETINGS, 1929.

JANUARY, 1929.

An Ordinary Monthly Meeting of the Asiatic Society of Bengal was held on Monday, the 7th, at 5-30 P.M.

PRESENT.

RAI UPENDRA NATH BRAHMACHARI BAHADUR, M.A., M.D.,
Ph.D., F.A.S.B., President, in the Chair.

Members :

Bose, Mr. M. M.	Ghose, Mr. T. P.
Chatterjee, Dr. S. K.	Hobbs, Mr. H.
Chatterji, Mr. M. M.	Hosain, Dr. M. Hidayat
Chatterji, Mr. Patitpabon	Manen, Mr. Johan van
Chopra, Mr. G. C.	Mukherjee, Mr. G. N.
Das-Gupta, Mr. Hem Chandra	Sarkar, Dr. S. L.
Dods, Mr. W. K.	Shaha, Dr. B.
Ezra, Sir David	Sohoni, Mr. V. V.
Fleming, Mr. Andrew	Stagg, Major M.
Ghose, Mr. Justice B. B.	Watling, Mr. R. G.
Ghose, Mr. Justice C. C., Kt.	and others.

Visitors :

Das, Mr. S. R.	Saha, Mr. T. N.
Ezra, Mr. E.	Watling, Mrs. R. G.
Ezra, Mrs. E.	and others.

The minutes of the last meeting were read and confirmed.

The General Secretary reported receipt of eighteen presentations of books, etc., which had been placed on the table for inspection.

The following candidates were balloted for for election as Ordinary Members :—

(1) *Basu, Sarat Chandra*, M.L.C., Advocate, 143, Dhurumtollah Street, Calcutta.

Proposer : B. B. Ghose.

Seconder : Johan van Manen.

(2) *MacLean, Evan Victor*, Traffic Officer, E.I.Ry.; 1, Colvin Court, Howrah.

Proposer : Baini Prashad.

Seconder : R. B. S. Sewell.

(3) *Pillai, G. P.*, Entomologist, The Lister Antiseptics and Dressing Co. (1928), Ltd.; 14, Hare Street, Calcutta.

Proposer : Johan van Manen.

Seconder : Baini Prashad.

(4) *Campbell Forrester, Mrs. Florence*, Fellow of the Archaeological Society of America, Y.W.C. Association, 134, Corporation Street, Calcutta; 1700, R.I. Avenue, Washington, D.C., U.S.A.

Proposer: L. L. Fermor.

Seconder: Johan van Manen.

(5) *Ghose, Mohim Chandra*, B.A. (Cal.), M.A. (Cantab.), Barrister-at-Law (Inner Temple), Indian Civil Service, Bengal Secretariat, Calcutta.

Proposer: N. F. Barwell.

Seconder: Johan van Manen.

(6) *Charpentier, Jarl Hellen Robert Toussaint*, Professor of Sanskrit Upsala, Sweden.

Proposer: Sir E. Denison Ross.

Seconder: Sir George Grierson.

The General Secretary reported the loss of membership during the previous month by resignation of:—

(39) J. N. Roy (An Ordinary Member, 1924).

(40) Bidhubhusan Roy (An Ordinary Member, 1927).

(41) M. N. Ray-Chaudhuri (An Ordinary Member, 1924).

(42) G. S. Bose (An Ordinary Member, 1926).

The General Secretary reported that the elections of:—

(8) Akshay Kumar Ghose (Elected on 4-9-28),

(9) Fred. O. Wellwood (Elected on 4-9-28),

had become null and void, under Rule 9.

The General Secretary reported that Mr. S. C. Chatterjee, whose election was announced in the previous meeting as lapsed under Rule 9, had since regularised his position, and that in consequence the entry had been rescinded.

In accordance with Rule 48 (a), the General Secretary announced that the Council, since the last Ordinary Monthly Meeting, had passed the following amendments to the present three Medal Regulations:—

(a) In No. 5, of the Regulations regarding the awards of the "Barclay Memorial", "Annandale Memorial" and "Sir William Jones Memorial" Medals, instead of "submitted to the Council at its January meeting", read "submitted to the Council at its December meeting".

(b) Add the following new clause at the end to the present three Medal Regulations:—

"(6) Notwithstanding anything determined in these Regulations, it shall be within the competence of the Board to abstain from the selection of any name to be submitted for the year and to report accordingly to the Council, in which case, provided the Council concurs, the award for the year shall lapse."

In accordance with Rules 2 and 13, the President announced that the Council propose the re-election as Associate Members

of the Society for a further period of five years of the following five gentlemen :—

- (1) Dr. A. Führer (1885).
- (2) Dr. A. H. Francke (1902).
- (3) Rev. H. Hosten, S.J. (1910).
- (4) Mr. W. Ivanow (1924).
- (5) MM. K. K. Smrititirtha (1924).

The following papers were read :—

1. V. V. SOHONI.—*Meteorological Normals of Calcutta.*
2. WILLIAM SHAW.—*Notes on the Thadou Kukis.*
3. E. H. L. SCHWARZ.—*The Chinese Connection with Africa.*

The following exhibits were shown and commented upon :—

1. S. K. CHATTERJI.—Four brass Images from the Island of Bali.

The President called upon the General Secretary to open a general discussion on "The Ordinary Monthly Meetings of the Society".

Several members present took part in the discussion which raised points of great importance.

The President announced the result of the ballot for the election of Ordinary Members and declared all candidates duly elected.

On a suggestion of the President, it was unanimously resolved to instruct the General Secretary to forward a letter of welcome on behalf of the Society to Prof. Charpentier together with the formal election notice.

The President announced that H.E. the Governor of Bengal had consented to preside over the Annual Meeting of the Society, to be held on Monday, 4th February, 1929, at 5-30 P.M.

The President invited the members present to communicate with the General Secretary the names and addresses of non-members to whom they wished invitations to be issued to the Annual Meeting.

FEBRUARY, 1929.

An Ordinary Monthly Meeting of the Asiatic Society of Bengal was held on Monday, the 4th, immediately after the termination of the Annual Meeting.

PRESENT.

KIRAN CHANDRA DE, ESQ., C.I.E., B.A., I.C.S. (Retired),
Life Member, in the Chair.

(4) *Campbell Forrester, Mrs. Florence*, Fellow of the Archaeological Society of America, Y.W.C. Association, 134, Corporation Street, Calcutta: 1700, R.I. Avenue, Washington, D.C., U.S.A.

Proposer: L. L. Fermor.

Seconder: Johan van Manen.

(5) *Ghose, Mohim Chandra*, B.A. (Cal.), M.A. (Cantab.), Barrister-at-Law (Inner Temple), Indian Civil Service, Bengal Secretariat, Calcutta.

Proposer: N. F. Barwell.

Seconder: Johan van Manen.

(6) *Charpentier, Jarl Hellen Robert Toussaint*, Professor of Sanskrit Upsala, Sweden.

Proposer: Sir E. Denison Ross.

Seconder: Sir George Grierson.

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(39) J. N. Roy (An Ordinary Member, 1924).

(40) Bidhubhusan Roy (An Ordinary Member, 1927).

(41) M. N. Ray-Chaudhuri (An Ordinary Member, 1924).

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(9) Fred. O. Wellwood (Elected on 4-9-28),

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- (5) MM. K. K. Smrititirtha (1924).

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The President announced the result of the ballot for the election of Ordinary Members and declared all candidates duly elected.

On a suggestion of the President, it was unanimously resolved to instruct the General Secretary to forward a letter of welcome on behalf of the Society to Prof. Charpentier together with the formal election notice.

The President announced that H.E. the Governor of Bengal had consented to preside over the Annual Meeting of the Society, to be held on Monday, 4th February, 1929, at 5-30 P.M.

The President invited the members present to communicate with the General Secretary the names and addresses of non-members to whom they wished invitations to be issued to the Annual Meeting.

FEBRUARY, 1929.

An Ordinary Monthly Meeting of the Asiatic Society of Bengal was held on Monday, the 4th, immediately after the termination of the Annual Meeting.

PRESENT.

KIRAN CHANDRA DE, Esq., C.I.E., B.A., I.C.S. (Retired),
Life Member, in the Chair.

(16) *Titus, Rev.*
Episcopal Church.

Proposer: John
Seconder: Upendra

(17) *Iyer, Mani*
Gate, Fort, Tanjore

Proposer: M. Mahfuz
Seconder: M. Mahfuz

(18) *Travers, W.*
Baradighi Tea Estate

Proposer: Sir A. A.
Seconder: John

(19) *Tagore, Pra*
Tagore Street, Calcutta

Proposer: Upendra
Seconder: B. B.

(20) *Goil, D. P.*
11, Forrest Road, Ho

Proposer: Upendra
Seconder: R. B.

(21) *Deb, Pasupati*
Sidency Magistrate, P.

Proposer: J. C. M.
Seconder: Upendra

(22) *Ahmad, Dab*
Anatomy, Campbell

Bhawanipore, Calcutta

Proposer: Upendra
Seconder: R. B.

(23) *Mitter, Hira*
Amherst Street P.O., C.

Proposer: Upendra
Seconder: Johan

(24) *De, J. C.*, M.A.
College; 48, Park Street

Proposer: Upendra
Seconder: R. B. S.

(25) *Basu, Bejoy K.*
Bhawanipore, Calcutta

Proposer: Upendra
Seconder: Johan

(26) *Das, Upendra*
Clinical Surgery, Camp

Proposer: Upendra
Seconder: R. B. S.

(27) *Lunan, A. G.*
House Street, Calcutta

Proposer: Upendra
Seconder: R. B. S.

(28) *Mullick, Pram*
holder, 129, Cornwallis S

Proposer: Upendra
Seconder: M. Mahfuz

Mitter, Mr. Justice D. N.
Mookerjee, Mr. S. C.
Prashad, Dr. Baini
Sewell, Lt.-Col. R. B. S.,
Sohoni, Mr. V. V.

Stapleton, Mr. H. E.

last meeting were read and confirmed.
tary announced that the presentations
ed during the last month would be
rdinary Meeting.

idates were balloted for for election as

., B.T., Professor of History, Morris College,

lul Ali.
upta.

an, B.A. (Alig.), Teacher, Anjuman High
n Hostel, Nagpur (C.P.).

lul Ali.
upta.

bunder, Barrister-at-Law, Assessor, Calcutta
Debendra Ghose Road, Bhawanipur, Calcutta.

lul Ali.
achari.

Art Student, 51, Rue de Varenne, Paris VIIe.

anen.

L.M.S., Zemindar and Medical Practitioner,

chhari.
losain.

en, D.Sc. (Sheffield), I.E.S. M.L.C., United

chhari.
nen.

ndra, Superintendent, Jagannath Temple,

anen.

ayana, Landholder, P.O. Parlakimedi, Dt.

nen.

ry reported the loss of membership
resignation of:—

ary Member, 1920).
inary Member, 1924).
inary Member, 1928).
ary Member, 1927).

The Chairman called for a ballot for the re-election as Associate Members of the Society of the following gentlemen for a further term of five years, under the terms of Rule 20:—

- (1) Dr. A. Führer.
- (2) Rev. A. H. Francke.
- (3) Rev. H. Hosten.
- (4) Mr. W. Ivanow.
- (5) MM. K. K. Smrititirtha.

The Chairman announced the result of the ballots for the re-election of Associate Members and the election of Ordinary Members, and declared all candidates duly elected.

MARCH, 1929.

An Ordinary Monthly Meeting of the Asiatic Society of Bengal was held on Monday, the 4th, at 5-30 P.M.

PRESENT.

RAI UPENDRA NATH BRAHMACHARI BAHADUR, M.A., M.D.,
Ph.D., F.A.S.B., President, in the Chair.

Members :

Bose, Mr. M. M.
Chakravarti, Mr. C.
Chatterji, Mr. M. M.
Chaudhuri, Dr. B. L.
Chaudhuri, Mr. J.
Coyajee, Sir J. C.
Das-Gupta, Mr. H. C.
De, Mr. K. C.
Fleming, Mr. Andrew
Gangoly, Mr. O. C.
Ghosal, Dr. U. N.

Hobbs, Mr. H.
Insch, Mr. James
Manen, Mr. Johan van
Mukherjee, Mr. D.
Neogi, Dr. P.
Olpadvala, Mr. E. S.
Prashad, Dr. Baini
Ray-Chaudhuri, Dr. H. C.
Sewell, Lt.-Col. R. B. S.
Stagg, Major M.
Young, Rev. A. W.

Visitors :

Asadullah, Mr. K. M.
Bhaduri, Mr. J.
Dutta, Mr. S. D.

Ghosh, Mr. K. C.
Goswami, Mr. K. G.
Mookerjee, Mr. D.

and others.

The minutes of the last meeting were read and confirmed.

The General Secretary reported receipt of thirty-eight presentations of books, etc., which had been placed on the table for inspection.

The following candidates were balloted for for election as Ordinary Members:—

(15) *Agate, Purushottam Narayan*, B.Sc., Engineer, 5, Council House Street, Calcutta.

Proposer: S. P. Agharkar.

Seconder: K. N. Dikshit.

(29) *Mitra, Jamini Mohan*, Rai Bahadur, M.A., Registrar, Co-operative Societies, Bengal, 24, Ray Street, Bhawanipore, Calcutta.

Proposer : Upendra Nath Brahmachari.

Seconder : Johan van Manen.

(30) *Boral, Arun Prokash*, Merchant and Landholder, 9-1, Sikdarpara Street, Calcutta.

Proposer : Upendra Nath Brahmachari.

Seconder : M. Mahfuz-ul Haq.

The General Secretary reported the loss of membership during the previous month by resignation of :—

(5) *Sailendranath Chatterjee* (An Ordinary Member, 1924).

(6) *J. W. D. Megaw* (An Ordinary Member, 1922).

The General Secretary reported that the election of

(9) *Nawab Musharruf Hossain* (Elected on 2-7-28),

had become null and void under Rule 9.

The General Secretary reported the constitution of the various standing Committees of the Society for 1929-30 to be as follows :—

Library Committee :

President.	} <i>Ex-officio.</i>
Treasurer.	
General Secretary.	
Philological	
Jt. Philological	
Biological	
Physical Science	
Anthropological	
Medical	
Library	
Sir C. C. Ghose.	

Publication Committee :

President.	} <i>Ex-officio.</i>
Treasurer.	
General Secretary.	
Philological	
Jt. Philological	
Biological	
Physical Science	
Anthropological	
Medical	
Library	
Sir C. C. Ghose.	

Finance Committee :

President.	} <i>Ex-officio.</i>
Treasurer.	
General Secretary.	
Sir R. N. Mookerjee.	
MM. H. P. Shastri.	
Mr. J. C. Mitra.	

In accordance with Rule 48(a), the General Secretary reported that the Council since the last Ordinary Monthly Meeting

Members :

Connor, Sir Frank
 Dikshit, Mr. K. N.
 Ghose, Mr. T. P.
 Ghuznavi, Sir A. K.
 Manen, Mr. Johan van

Mitter, Mr. Justice D. N.
 Mookerjee, Mr. S. C.
 Prashad, Dr. Baini
 Sewell, Lt.-Col. R. B. S.,
 Sohoni, Mr. V. V.

Stapleton, Mr. H. E.

The minutes of the last meeting were read and confirmed.

The General Secretary announced that the presentations of books, etc., received during the last month would be exhibited at the next Ordinary Meeting.

The following candidates were balloted for for election as Ordinary Members:—

(7) *Narain, Hirde*, M.A., B.T., Professor of History, Morris College, Nagpur (C.P.).

Proposer: A. F. M. Abdul Ali.

Seconder: H. C. Das-Gupta.

(8) *Khan, Siddiqi Hasan*, B.A. (Alig.), Teacher, Anjuman High School, Supervisor, Anjuman Hostel, Nagpur (C.P.).

Proposer: A. F. M. Abdul Ali.

Seconder: H. C. Das-Gupta.

(9) *Ghose, Dharendra Chunder*, Barrister-at-Law, Assessor, Calcutta Improvement Tribunal, 23, Debendra Ghose Road, Bhawanipur, Calcutta.

Proposer: A. F. M. Abdul Ali.

Seconder: U. N. Brahmachari.

(10) *de Gasparin, Edith*, Art Student, 51, Rue de Varenne, Paris VIIe.

Proposer: F. G. Dikkers.

Seconder: Johan van Manen.

(11) *Srimani, Joggeswar*, L.M.S., Zemindar and Medical Practitioner, Chandernagore, E.I.R.

Proposer: U. N. Brahmachari.

Seconder: M. Hidayat Hosain.

(12) *Jenkins, Walter Allen*, D.Sc. (Sheffield), I.E.S. M.L.C., United Service Club, Calcutta.

Proposer: U. N. Brahmachari.

Seconder: Johan van Manen.

(13) *Dev, Raja Ramchandra*, Superintendent, Jagannath Temple, P.O. Puri.

Proposer: P. Acharya.

Seconder: Johan van Manen.

(14) *Rajaguru, Satyanarayana*, Landholder, P.O. Parlakimedi, Dt. Ganjam.

Proposer: P. Acharya.

Seconder: Johan van Manen.

The General Secretary reported the loss of membership during the last month by resignation of:—

(1) J. N. Lahiri (An Ordinary Member, 1920).

(2) P. N. Mukerjee (An Ordinary Member, 1924).

(3) J. P. Gangooly (An Ordinary Member, 1928).

(4) C. J. Grimes (An Ordinary Member, 1927).

The Chairman called for a ballot for the re-election as Associate Members of the Society of the following gentlemen for a further term of five years, under the terms of Rule 20:—

- (1) Dr. A. Führer.
- (2) Rev. A. H. Francke.
- (3) Rev. H. Hosten.
- (4) Mr. W. Ivanow.
- (5) MM. K. K. Smrititirtha.

The Chairman announced the result of the ballots for the re-election of Associate Members and the election of Ordinary Members, and declared all candidates duly elected.

MARCH, 1929.

An Ordinary Monthly Meeting of the Asiatic Society of Bengal was held on Monday, the 4th, at 5-30 P.M.

PRESENT.

RAI UPENDRA NATH BRAHMACHARI BAHADUR, M.A., M.D.,
Ph.D., F.A.S.B., President, in the Chair.

Members :

Bose, Mr. M. M.
Chakravarti, Mr. C.
Chatterji, Mr. M. M.
Chaudhuri, Dr. B. L.
Chaudhuri, Mr. J.
Coyajee, Sir J. C.
Das-Gupta, Mr. H. C.
De, Mr. K. C.
Fleming, Mr. Andrew
Gangoly, Mr. O. C.
Ghosal, Dr. U. N.

Hobbs, Mr. H.
Insch, Mr. James
Manen, Mr. Johan van
Mukherjee, Mr. D.
Neogi, Dr. P.
Olpadvala, Mr. E. S.
Prashad, Dr. Baini
Ray-Chaudhuri, Dr. H. C.
Sewell, Lt.-Col. R. B. S.
Stagg, Major M.
Young, Rev. A. W.

Visitors :

Asadullah, Mr. K. M.
Bhaduri, Mr. J.
Dutta, Mr. S. D.

Ghosh, Mr. K. C.
Goswami, Mr. K. G.
Mookerjee, Mr. D.

and others.

The minutes of the last meeting were read and confirmed.

The General Secretary reported receipt of thirty-eight presentations of books, etc., which had been placed on the table for inspection.

The following candidates were balloted for for election as Ordinary Members:—

(15) *Agate, Purushottam Narayan, B.Sc., Engineer, 5, Council House Street, Calcutta.*

Proposer: S. P. Agharkar.

Seconder: K. N. Dikshit.

- (16) *Titus, Rev. Murray T.*, Ph.D., D.D., Missionary of the Methodist Episcopal Church, Budaun, U.P.
Proposer: Johan van Manen.
Seconder: Upendra Nath Brahmachari.
- (17) *Iyer, Mandakolatore Subrahmanya*, 879, Nagamaram Lane, East Gate, Fort, Tanjore.
Proposer: M. Mahfuz-ul Haq.
Seconder: M. Hidayat Hosain.
- (18) *Travers, Walter Lancelot*, C.I.E., O.B.E., M.L.C., Tea Planter, Baradighi Tea Estate, Baradighi P.O., B.D.R., Jalpaiguri.
Proposer: Sir A. K. Ghuznavi.
Seconder: Johan van Manen.
- (19) *Tagore, Prafulla Nath*, Zemindar and Landholder, 1, Darpanarain Tagore Street, Calcutta.
Proposer: Upendra Nath Brahmachari.
Seconder: B. B. Ghose.
- (20) *Goil, D. P.*, Lt.-Col., I.M.S., M.B., F.R.C.S.E., Civil Surgeon, 11, Forrest Road, Howrah.
Proposer: Upendra Nath Brahmachari.
Seconder: R. B. Seymour Sewell.
- (21) *Deb, Pasupati Nath*, Zemindar and Landholder, Honorary Presidency Magistrate, P-16, Chittaranjan Avenue North, Calcutta.
Proposer: J. C. Mitra.
Seconder: Upendra Nath Brahmachari.
- (22) *Ahmad, Dabiruddin*, Hadji, Captain, L.M.S., A.I.R.O., Teacher of Anatomy, Campbell Medical School, 21-2-C, Haris Mukherjee Road, Bhawanipore, Calcutta.
Proposer: Upendra Nath Brahmachari.
Seconder: R. B. Seymour Sewell.
- (23) *Mitter, Hiranya Kumar*, Landholder, 1, Jhamapukur Lane, Amherst Street P.O., Calcutta.
Proposer: Upendra Nath Brahmachari.
Seconder: Johan van Manen.
- (24) *De, J. C.*, Major, I.M.S., Professor of Clinical Medicine, Medical College; 48, Park Street, Calcutta.
Proposer: Upendra Nath Brahmachari.
Seconder: R. B. Seymour Sewell.
- (25) *Basu, Bejoy K.*, M.A., B.L., Mayor of Calcutta, 50, Goaltule Road, Bhawanipore, Calcutta.
Proposer: Upendra Nath Brahmachari.
Seconder: Johan van Manen.
- (26) *Das, Upendra Nath*, B.A., M.B., F.R.C.S. (Edin.), Teacher of Clinical Surgery, Campbell Medical School; 34, Elgin Road, Calcutta.
Proposer: Upendra Nath Brahmachari.
Seconder: R. B. Seymour Sewell.
- (27) *Lunan, A. G.*, Partner, Messrs. Bathgate & Co., 19, Old Court House Street, Calcutta.
Proposer: Upendra Nath Brahmachari.
Seconder: R. B. Seymour Sewell.
- (28) *Mullick, Pramatha Nath*, Rai Bahadur, Zemindar and Landholder, 129, Cornwallis Street, Calcutta.
Proposer: Upendra Nath Brahmachari.
Seconder: M. Mahfuz-ul Haq.

(29) *Mitra, Jamini Mohan*, Rai Bahadur, M.A., Registrar, Co-operative Societies, Bengal, 24, Ray Street, Bhawanipore, Calcutta.

Proposer: Upendra Nath Brahmachari.

Seconder: Johan van Manen.

(30) *Boral, Arun Prokash*, Merchant and Landholder, 9-1, Sikdarpara Street, Calcutta.

Proposer: Upendra Nath Brahmachari.

Seconder: M. Mahfuz-ul Haq.

The General Secretary reported the loss of membership during the previous month by resignation of:—

(5) Sailendranath Chatterjee (An Ordinary Member, 1924).

(6) J. W. D. Megaw (An Ordinary Member, 1922).

The General Secretary reported that the election of

(9) Nawab Musharruf Hossain (Elected on 2-7-28),

had become null and void under Rule 9.

The General Secretary reported the constitution of the various standing Committees of the Society for 1929-30 to be as follows:—

Library Committee :

President.	} Secretaries.	} <i>Ex-officio.</i>
Treasurer.		
General Secretary.		
Philological		
Jt. Philological		
Biological		
Physical Science		
Anthropological		
Medical		
Library		
Sir C. C. Ghose.		

Publication Committee :

President.	} Secretaries.	} <i>Ex-officio.</i>
Treasurer.		
General Secretary.		
Philological		
Jt. Philological		
Biological		
Physical Science		
Anthropological		
Medical		
Library		
Sir C. C. Ghose.		

Finance Committee :

President.	} <i>Ex-officio.</i>
Treasurer.	
General Secretary.	
Sir R. N. Mookerjee.	
MM. H. P. Shastri.	
Mr. J. C. Mitra.	

In accordance with Rule 48(a), the General Secretary reported that the Council since the last Ordinary Monthly Meeting

had passed the following amendments to the present Regulations regarding the awards of the various medals of the Society.

In Regulation (3) of all awards, instead of "at its meeting", read "at a meeting".

In the same Regulation, instead of "of five" or "of four", read "of not less than three".

The General Secretary announced that Dr. Satya Churn Law had offered a donation to the Society of Rs. 2,350 for the institution of a triennial award for meritorious work on Zoology in Asia.

The Council had gratefully accepted the gift and formed Regulations regarding the award as follows, now reported to the meeting in accordance with Rule 48(a) as passed by the Council since the last Ordinary Monthly Meeting.

Regulations regarding the award of the Joy Gobind Law Medal.

In March 1929, Dr. Satya Churn Law made over to the Asiatic Society of Bengal, in memory of Joy Gobind Law, a donation of Rs. 2,350 for the creation of an endowment for the triennial award of a medal for conspicuously important work on Zoology in Asia.

The Council made the following regulations for the award of the medal:—

(1) The Medal shall be awarded every three years at the Ordinary Annual Meeting of the Asiatic Society of Bengal, in February.

(2) The Medal shall be bestowed on a person who, in the opinion of the Council, has made conspicuously important contributions to our knowledge of Zoology in Asia.

(3) The Council shall, at a meeting preceding the Ordinary Monthly Meeting in November, appoint an Advisory Board consisting of not less than three and not more than five members.

(4) The Advisory Board shall be termed "The Joy Gobind Law Medal Advisory Board" and shall include the Biological Secretary. The Board shall appoint a Chairman from amongst its members who shall have a casting vote (in addition to his own vote) in the event of the number of votes being equally divided.

(5) The General Secretary shall call a meeting of the Advisory Board on the first convenient date subsequent to the first Monday of December, at the same time requesting members to bring with them to the meeting detailed statements of the work or attainments of such candidates as they may wish to propose. The General Secretary shall also place before the Board for consideration detailed statements of the work or attainments of any other candidate submitted by any Fellow of the Society. The Board shall make such arrangements as may be necessary for the selection of a name to be submitted to the Council at its December meeting.

(6) Notwithstanding anything determined in these Regulations it shall be within the competence of the Board to abstain from the selection of any name to be submitted for the year and to report accordingly to the Council, in which case, provided the Council concurs, the award for the year shall lapse.

The following papers were read :—

1. SIR. J. C. COYAJEE.—*The Bahram Yasht—Analogue and Origins.*
2. LILY STRICKLAND-ANDERSON.—*Aboriginal and animistic Influences in Indian Music.*
3. CHINTAHARAN CHAKRAVARTI.—*Sanskrit Literature pertaining solely to Vernacular and exotic Culture.*
4. CHINTAHARAN CHAKRAVARTI.—*Date of the Niti section of Garuda Purana.*
5. M. M. CHATTERJI.—*Interpolation in the Brahma Sutram.*
6. K. G. GOSWAMI.—*The Satak Copper plate Grant of King Rama Senha II, of Jaintia, of 1809 A.D.*
7. R. R. HALDAR.—*The Chauhans.*
8. C. W. GURNER.—*Two notes on Bhavabhuti.*
9. GEORGE N. ROERICH.—*Modern Tibetan Phonetics with special reference to the dialect of Central Tibet.*
10. J. L. BHADURI.—*A case of Hermaphroditism in a Common Indian Frog, Rana Tigrina Daud, with a note on the classification of Hermaphroditic cases.*

The President announced the result of the ballot for the election of Ordinary Members and declared all candidates duly elected.

The President proposed that the congratulations of the Society should be conveyed to Sir Binode Chandra Mitter, a distinguished member of the Society, at the occasion of his nomination to membership in the Judicial Committee of the Privy Council: Carried by acclamation.

—◆—
APRIL, 1929.

An Ordinary Monthly Meeting of the Asiatic Society of Bengal was held on Monday, the 1st, at 5-30 P.M.

PRESENT.

RAI UPENDRA NATH BRAHMACHARI BAHADUR, M.A., M.D., Ph.D., F.A.S.B., President, in the Chair.

Members :

Agate, Mr. P. N.
Bhattacharya, Mr. N. C.
Chatterjee, Mr. P. P.
Chatterjee, Mr. S. C.
Chaudhuri, Dr. B. L.
Collet, Mr. A. L.
Das-Gupta, Mr. H. C.
Dikshit, Mr. K. N.
Fleming, Mr. Andrew

Hobbs, Mr. H.
Hora, Dr. S. L.
Manen, Mr. Johan van
Mitter, Mr. H. K.
Mookerjee, Mr. S. C.
Shastri, MM. H. P.
Sohoni, Mr. V. V.
Watling, Mr. R. G.
Zachariah, Mr. K.

Visitors :

Basu, Mr. Jatindranath
Bery, Mr. A. R.
Das-Gupta, Mr. C. C.

Watling, Mrs. R. G.
Williams, Rev. H. F. F.
and others.

The minutes of the last meeting were read and confirmed.

The President in opening the proceedings addressed a word of hearty welcome in the meeting to Mahamahopadhyaya Haraprasad Shastri after his long absence since a serious accident which happened to him last year.

The General Secretary reported receipt of twenty presentations of books, etc., which had been placed on the table for inspection.

The following candidates were balloted for for election as Ordinary Members :—

(31) *Ghose, Deb Prosonno*, Zemindar, 75, Beadon Street, Calcutta.

Proposer : Johan van Manen.

Seconder : U. N. Brahmachari.

(32) *Asadullah, K. M.*, B.A., Librarian, Imperial Library, Calcutta.

Proposer : U. N. Brahmachari.

Seconder : Baini Prashad.

(33) *Rizvi, Syed Hamid Husain*, Excise Sub-Inspector, Saoner, Dt. Nagore.

Proposer : A. Suhrawardy.

Seconder : U. N. Brahmachari.

(34) *Chakravarty, Satya Niranjan*, Rajah Bahadur of Hetampur, Hetampur, Dt. Birbhum.

Proposer : U. N. Brahmachari.

Seconder : S. L. Hora.

(35) *Bose, Jogendra Nath*, Zemindar, 22, Ballygunge Circular Road, Calcutta.

Proposer : U. N. Brahmachari.

Seconder : S. L. Hora.

(36) *Kolb, Eugene Henry*, Engineer, Standard Oil Co. of New York; 6, Church Lane, Calcutta.

Proposer : J. F. Snaith.

Seconder : N. F. Barwell.

(37) *Chatterjee, Phanindra Mohun*, Retired District and Sessions Judge, 8, Pataldanga Street, Calcutta.

Proposer : U. N. Brahmachari.

Seconder : M. Hidayat Hosain.

(38) *Ginwala, Sir Padamji*, President, Indian Tariff Board, 1, Council House Street, Calcutta.

Proposer : Johan van Manen.

Seconder : U. N. Brahmachari.

(39) *Sen-Gupta, Naras Chandra*, M.A., D.L., Advocate, High Court; 128-B, Justice Chandra Madhav Road, Bhawanipore, Calcutta.

Proposer : U. N. Brahmachari.

Seconder : Sir J. C. Coyajee.

The General Secretary reported the loss of membership during the previous month by resignation of :—

(7) A. A. E. Baptist (An Ordinary Member, 1926).

(8) Gautam Sondhi (An Ordinary Member, 1926).

(9) E. B. Walton (An Ordinary Member, 1925).

(10) H. H. Nomani (An Ordinary Member, 1926).

(11) H. B. Steen (An Ordinary Member, 1908).

The General Secretary reported that Nawab Khan Bahadur Musharruf Hossain, whose election was announced in the previous meeting as lapsed, had since regularised his position, and that in consequence the entry had been rescinded.

The General Secretary reported that the following candidate had withdrawn his application for membership.

(1) G. D. Bhalerao (Elected on 3-12-28).

In accordance with Rule 45, the General Secretary announced that the Council submit for confirmation to the meeting the following change in the composition of the Council made in one of the Council meetings, since the last Ordinary Monthly Meeting:—

Natural History Secretary (Biology)—Dr. S. L. Hora, *vice* Lt.-Col. R. B. S. Sewell, resigned.

In accordance with Rules 2 and 13, the General Secretary announced that the Council propose for election of Mahamahopadhyaya Sadasiva Misra, Kavya-Kantha, as an Associate Member of the Society for a period of 5 years, and stated the grounds on which the recommendation was made.

The following papers were read:—

1. K. ZACHARIAH.—*Thucydides II. 13. A possible Explanation of certain Difficulties.*

2. S. R. KASHYAP.—*Some geographical Observations in Western Tibet.*

3. BIBHUTIBHUSAN DATTA.—*On the Hindu Names for the rectilinear geometrical Figures.*

4. N. C. BHATTACHARYA and S. C. SEN.—*Hardening of Indian Cheese (Chana).*

5. N. L. BOR and C. R. PAWSEY.—*English-Sema-Naga Vocabulary.*

6. W. IVANOW.—*A Biography of Ruzbihan al-Baghi.*

7. H. P. SHASTRI.—*On the Date of Compilation of Bhattoji-Dikshita's Siddhanta Kaumudi.*

The President announced the result of the ballot for the election of Ordinary Members and declared all candidates duly elected.

MAY, 1929.

An Ordinary Monthly Meeting of the Asiatic Society of Bengal was held on Monday, the 6th, at 5-30 P.M.

PRESENT.

RAI UPENDRA NATH BRAHMACHARI BAHADUR, M.A., M.D.,
Ph.D., F.A.S.B., President, in the Chair.

Members :

Asadullah, Mr. K. M.	Ghose, Mr. T. P.
Bivar, Mr. H. G. S.	Hora, Dr. S. L.
Campbell-Forrester, Mrs. F.	Manen, Mr. Johan van
Chaudhuri, Dr. B. L.	Neogi, Dr. P.
Chaudhuri, Mr. J.	Pillai, Mr. G. P.
Chatterjee, Mr. P. M.	Prashad, Dr. Baini
Chatterji, Mr. M. M.	Rahman, Mr. A. S. M. L.
Christie, Dr. W. A. K.	Rao, Dr. H. S.
Das-Gupta, Mr. H. C.	Rao, Rao Bahadur M. V.
Dikshit, Mr. K. N.	Watling, Mr. R. G.
Drummond, Mr. J. G.	Young, Rev. A. W.

Visitors :

Basu, Mr. P. C.	Majumdar, Mr. P. C.
Bogdanov, Mr. L.	Watling, Mrs R. G.
Chatterjee, Mr. N.	Williams, Rev. H. F. F.

and others.

The minutes of the last meeting were read and confirmed.

The General Secretary reported receipt of twenty-one presentations of books, etc., which had been placed on the table for inspection.

The following candidates were balloted for for election as Ordinary Members:—

(40) *Sharma, Sri Ram*, M.A., M.R.A.S., M.A.O.S., Professor of History, D.A.V. College, Lahore.

Proposer: Ekendranath Ghosh.

Seconder: Amulya Charan Vidyabhusan.

(41) *Williams, Henry French Fulford*, M.A., Clare College (Camb.), Senior Chaplain, St. John's House, Calcutta.

Proposer: A. L. Collet.

Seconder: U. N. Brahmachari.

(42) *Sastri, D. S. Balasubramaniya*, Bhashachatushtaya Pandita (Passed Nyaya Mimansa Siromani Class in 1913), Telugu Pandit, Borstal School, Tanjore; Borstal Teachers' Lines, Tanjore.

Proposer: Ekendranath Ghosh.

Seconder: Amulya Charan Vidyabhusan.

(43) *Pawsey, C. R.*, Indian Civil Service, Mokokchung, Naga Hills, Assam.

Proposer: J. H. Hutton.

Seconder: Johan van Manen.

(44) *Ghosh, Baidya Nath*, Fellow of the Television Society (London), 56, Laksa, Benares City, U.P.

Proposer: Ekendranath Ghosh.

Seconder: Amulya Charan Vidyabhusan.

(45) *Sanyal, Srish Chandra*, Astronomer, 25, Rani Branch Road, P.O. Cossipur, Calcutta.

Proposer: G. P. Pillai.

Seconder: Ekendranath Ghosh.

(46) *Aken, Carel Emanuel van*, Manager, Java Bengal Line, Vice-Consul for the Netherlands, c/o Messrs. Java Bengal Line, Clive Buildings, Calcutta.

Proposer : Johan van Manen.
 Seconder : U. N. Brahmachari.

(47) *Ahmad, Zia Uddin*, C.I.E., M.A., D.Sc., Ph.D., Late Vice-Chancellor, University of Aligarh, Zia Manzil, Aligarh, U.P.

Proposer : Upendra Nath Brahmachari.
 Seconder : M. Hidayat Hosain.

(48) *Kapur, Diwan Ram Chandra*, Millowner and Banker, Diwan Balmokund Kapur Lane, Benares City.

Proposer : Prabodh Chandra Bagchi.
 Seconder : Bisveswar Bhattacharyya.

The General Secretary reported the deaths of :—

- (1) S. Sethu Rama Rao (An Ordinary Member, 1926).
- (2) J. C. Dutt (An Ordinary Member, 1926).
- (3) Saiyed Nawab Ali Chaudhuri (An Ordinary Member, 1914).

The General Secretary reported the loss of membership during the previous month by resignation of :—

- (12) D. K. Das (An Ordinary Member, 1927).
- (13) M. Younus (An Ordinary Member, 1926).

The General Secretary reported that the election of :—

- (9) Azizul Huque (Elected on 2-7-1928),

had become null and void, under Rule 9.

In accordance with Rule 38, the General Secretary announced that the names of the following Ordinary Members would be suspended as defaulters within the Society's building for the period of a month, to be removed from the Society's registers for non-payment, unless the amount due be paid before the next Ordinary Monthly Meeting :—

- (1) Pramathanath Banerjee.
- (2) Brij Narain.
- (3) Syed Emdadul Haq.
- (4) Taraprasanna Gupta.
- (5) Deomitra Mishra.
- (6) Syed Naseer Hossain Khayal.
- (7) Ganganand Sinha.
- (8) Parshotam Das Singhanian.
- (9) S. Abdul Kader Surfraz.

In accordance with Rules 2 and 13, the President called for a ballot for the election as an Associate Member of the Society of MM. Pundit Sadasiva Misra, proposed for election in the Ordinary Monthly Meeting on 1st April, 1929.

The following papers were read :—

1. KALIPADA MITRA.—*Originals and Parallels of Santal Folktales.*
2. D. N. MAJUMDAR.—*Race and Adaptability.*
3. B. BONNELL.—*Geophilid Centipodes from the Bed of the Cooum River (Madras).*
4. P. CH. BASU.—*The Anthropology of the Bhuiyas of Mayurbhanj.*
5. HEM CH. DAS-GUPTA.—*On a new Theropod Dinosaur (Orthogoniosaurus Matleyi, n. gen. et. n. sp.) from the Lameta Beds of Jabulpore.*
6. MOHINI M. CHATTERJI.—*Brahmanism and lawful Food.*

In view of the lateness of the hour, the President deferred to the next Meeting :—

A communication by Mr. Johan van Manen on :—

1. The linguistic Aspect of the 116th report of the British and Foreign Bible Society, Calcutta Auxiliary, for 1928, and an exhibit by the General Secretary on :—

2. A Sanskrit Manuscript from Kashmir, belonging to the Society's collections, written in Persian script.

The President announced the result of the ballots for the election of Ordinary Members and the Associate Member, and declared all candidates duly elected.



JUNE, 1929.

An Ordinary Monthly Meeting of the Asiatic Society of Bengal was held on Monday, the 3rd, at 5-30 P.M.

PRESENT.

RAI UPENDRA NATH BRAHMACHARI BAHADUR, M.A., M.D., Ph.D., F.A.S.B., President, in the Chair.

Members :

Campbell-Forrester, Mrs. F.
Ghosal, Dr. U. N.
Ghose, Mr. T. P.

Manen, Mr. Johan van
Raman, Sir C. V.
Rafique, Mr. Md.
Watling, Mr. R. G.

Visitors :

Chandrasekhara, Mr. J.

Watling, Mrs. R. G.

The minutes of the last meeting were read and confirmed.

The General Secretary reported receipt of fourteen presentations of books, etc., which had been placed on the table for inspection.

The following candidate was balloted for for election as an Ordinary Member :—

(49) *Sen, Prabodh Chandra*, M.A., Research Assistant, Calcutta University, 12, Radhanath Mallik Lane, Calcutta.

Proposer : U. N. Brahmachari.

Seconder : Baini Prashad.

The General Secretary reported the loss of membership during the previous month by resignation of :—

(14) R. K. Shanmukham Chetty (An Ordinary Member, 1927).

(15) J. N. Kilner (An Ordinary Member, 1909).

(16) Edwin Watson (An Ordinary Member, 1928).

(17) P. L. Roy (An Ordinary Member, 1924).

The General Secretary reported that the election of:—

(2) Siddiqi Hassan Khan (Elected on 2-2-29),
had become null and void, under Rule 9.

In accordance with Rule 38, the President announced that the names of the following members, who had, since the last Ordinary Monthly Meeting, been suspended as defaulters within the Society's building, had now been removed as defaulters from the registers for non-payment of dues:—

- (1) Pramathanath Banerjee.
- (2) Brij Narain.
- (3) Shah Emdadul Haq.
- (4) Taraprasanna Gupta.
- (5) Deomitra Mishra.
- (6) Syed Naseer Hossain Khayal.
- (7) Ganganand Sinha.
- (8) Parshotam Das Singhania.
- (9) S. Abdul Kader Surfraz.

The following papers were read:—

1. T. S. RAMAKRISHNAN.—*A wilt of Zinnia caused by sclerotium Rolfsii.*
2. C. R. PAWSEY.—*Ten Folk-stories in Sema Naga.*

The following communication was made:—

1. JOHAN VAN MANEN.—“The linguistic aspect of the 116th Annual Report of the British and Foreign Bible Society, Calcutta Auxiliary for 1928.”

The following exhibits were shown and commented upon by the General Secretary (of which the first had been held over from the previous meeting):—

1. A Sanskrit Manuscript from Kashmir, belonging to the Society's collections, written in Persian script.
2. A recent publication of the Society—Prof. W. Caland's English translation of the Vaikhanasasmarta Sutram.

The President announced the result of the ballot for the election of the Ordinary Member and declared the candidate duly elected.

Before closing the meeting, the President addressed Sir C. Venkata Raman conveying to him, on behalf of the Society, its hearty congratulations with the distinction of knighthood conferred upon him.

Sir C. Venkata Raman briefly replied.

JULY, 1929.

An Ordinary Monthly Meeting of the Asiatic Society of Bengal was held on Monday, the 1st, at 5-30 P.M.

PRESENT.

RAI UPENDRA NATH BRAHMACHARI BHADUR, M.A., M.D.,
Ph.D., F.A.S.B., President, in the Chair.

Members :

Agharkar, Dr. S. P.
Bose, Mr. M. M.
Chakravarti, Mr. C.
Chatterji, Dr. S. K.
Chatterji, Mr. P. M.
Chaudhuri, Dr. B. L.
Das, Dr. Kedarnath
Das-Gupta, Mr. H. C.
Ghose, Mr. T. P.

Gurner, Mr. C. W.
Hora, Dr. S. L.
Manen, Mr. Johan van
Mukherjee, Dr. J. N.
Prashad, Dr. Baini
Rao, Rao Bahadur M. V.
Sarvadhikary, Sir D. P.
Sharif, Mr. M.
Sohoni, Mr. V. V.

Visitors :

Bhattacharji, Mr. A. T.

Gurner, Mrs.

The minutes of the last meeting were read and confirmed.

The General Secretary reported receipt of thirteen presentations of books, etc., which had been placed on the table for inspection, and drew special attention to the exhaustive work, "Obstetric Forceps: Its History and Evolution" Calcutta, 1929, by Dr. Kedarnath Das, C.I.E. The President conveyed the Society's congratulations to Dr. Kedarnath Das, who was present in the meeting, with the successful issue of this important work.

The following candidates were balloted for for election as Ordinary Members :—

(50) *Dunn, John Alexander*, D.Sc., D.I.C., F.G.S., Assistant Superintendent, Geological Survey of India, Indian Museum, Calcutta.

Proposer: W. A. K. Christie.

Seconder: H. Crookshank.

(51) *Glass-Hooper, Cyril Tom*, Engineer (Manager for East of Messrs. Carrier Engineering Co., Ltd.), F-2, Clive Buildings, Calcutta.

Proposer: Johan van Manen.

Seconder: H. P. Shastri.

(52) *Banerji, Bijan Behari*, M.Sc. (All.), Ph.D. (Lond.), E.P.S., A. Inst.P., Lecturer in charge of Department of Physics and Mathematics, Indian School of Mines, Dhanbad.

Proposer: K. Chattopadhyaya.

Seconder: S. K. Chatterji.

(53) *Guha, G. S.*, M.A., B.L., Under-Secretary, Government of Assam, Shillong.

Proposer: U. N. Brahmachari.

Seconder: S. K. Chatterji.

(54) *Mitra, S. L.*, M.B., D.P.H., Major, I.M.S., Officiating Director of Public Health, Government of Assam, Shillong.

Proposer: U. N. Brahmachari.

Seconder: M. Hidayat Hossain.

(55) *Gupta, Surendra Chandra*, M.A., Ph.D., Professor of English, Murarichand College, Sylhet, Assam.

Proposer: U. N. Brahmachari.
Seconder: S. K. Chatterji.

(56) *Ghose, Prandhone*, Capt., I.M.S. (retd.), Asst. Surgeon, Government Hospital, Shillong, Assam.

Proposer: U. N. Brahmachari.
Seconder: S. L. Hora.

The General Secretary reported the death of:—

(4) B. Chakravarti (An Ordinary Member, 1927).

The General Secretary reported the loss of membership during the previous month by resignation of:—

(18) George Varugis (An Ordinary Member, 1925).

The General Secretary reported that the election of:—

(3) Satyanarayana Rajaguru (elected on 4-2-29)
had become null and void, under Rule 9.

In accordance with Rule 40, the General Secretary announced that the names of the following Ordinary Members would be removed from the Society's member list:—

- (1) The Earl of Ronaldshay (1920).
- (2) J. T. Rankin (1905).
- (3) W. G. L. Gilbert (1924).
- (4) M. C. G. Young (1906).
- (5) G. L. Houstoun (1873).
- (6) R. C. James (1925).

The following papers were read:—

1. V. V. SOHONI.—*Weather Types associated with Nor'-westers in Bengal.*
2. CHINTAHARAN CHAKRAVARTI.—*The Cult of Baro Bhaiya of Eastern Bengal.*

After the reading of the papers, the following communications were made:—

1. S. K. CHATTERJI.—A note on the Recursives and the Glottal stop in new Indo-Aryan.
2. JOHAN VAN MANEN.—The Tao Te king in the west.

The President announced the result of the ballot for the election of Ordinary Members and declared all candidates duly elected.

AUGUST, 1929.

An Ordinary Monthly Meeting of the Asiatic Society of Bengal was held on Monday, the 5th, at 5-30 P.M.

PRESENT.

RAI UPENDRA NATH BRAHMACHARI BAHADUR, M.A., M.D.,
Ph.D., F.A.S.B., President, in the Chair.

Members :

Ahmed, Capt. Dabiruddin	Hora, Dr. S. L.
Basu, Mr. J. N.	Ishaque, Mr. Md.
Bhattacharya, Mr. Bisveswar	Jain, Mr. C. L.
Bose, Mr. M. M.	Manen, Mr. Johan van
Chatterji, Mr. M. M.	Neogi, Dr. P.
Chatterji, Mr. S. C.	Pillai, Mr. G. P.
Coyajee, Sir J. C.	Prashad, Dr. Baini
Das-Gupta, Mr. H. C.	Sarvadhikary, Sir D. P.
Dikshit, Mr. K. N.	Sen, Mr. P. C.
Ghose, Mr. Justice B. B.	Singh, Mr. B. R.
Ghose, Mr. T. P.	Stagg, Major M.
Ghuznavi, Mr. I. S. K.	Young, Rev. A. W.

Visitors :

Chatterjee, Mr. N.	Rao, Mr. N. Subba
Sen, Mr. S. C.	

The minutes of the last meeting were read and confirmed.

The General Secretary reported receipt of twenty-two presentations of books, etc., which had been placed on the table for inspection.

The General Secretary reported receipt of four Sanskrit manuscripts presented to the Society by Pundit Rajani Kanta Sahityacharya, Principal, Sanskrit College, Chittagong.

The following candidate was balloted for for election as an Ordinary Member :—

(57) *Sommerfeld, Alfred*, Merchant, 5, Ballygunge Park, Calcutta.
Proposer: N. F. Barwell.
Seconder: Baini Prashad.

The General Secretary reported the deaths of :—

- (5) Amrita Lal Bose (An Ordinary Member, 1898).
- (6) Sir Rameshwar Singh, Maharajah of Darbhanga (A Life Member, 1899).
- (7) Bepin Behari Ghosh (An Ordinary Member, 1928).

The General Secretary reported the loss of membership during the previous month by resignation of :—

- (19) H. Cecil Jones (An Ordinary Member, 1908).
- (20) Sarasi Lal Sarkar (An Ordinary Member, 1927).
- (21) D. H. Keelan (An Ordinary Member, 1927).
- (22) Nogendra Lal Datta (An Ordinary Members, 1928).
- (23) Sir Mohammed Habibullah (An Ordinary Member, 1925).

In accordance with Rule 48 (a), the General Secretary reported that the Council, since the last Ordinary Monthly Meeting, had passed the following amendments to the present Regulations.

Library Regulations.

- No. 4—last words, for “Honorary Librarian,” read “General Secretary”.
- „ 10—last words, *id.*

No. 21—lines 2 and 4—for “Assistant Secretary,” read “General Secretary”.

Strike out last sentence from “Manuscripts” to “Officer-in-charge”.

Manuscript Lending Regulations.

No. 2—last words, for “Philological Committee,” read “Council”.

Regulations Regarding Submission of Papers.

No. 4—lines 5 and 6—for “Editor of the Journal and Proceedings,” read, “the President, the General Secretary, the Treasurer and the Sectional Secretaries”.

„ 7—Delete.

Sub-Section, B. Bibliotheca Indica.

No. 1—for “Philological Secretary,” read “General Secretary”.

„ 2—for “Philological Secretary to consult,” read “General Secretary shall consult the Philological Secretary, and shall further consult”.

„ 3—line 2, for “to be,” read “shall be”.

„ 5—line 1, for “to be,” read “shall be”.

„ 5—line 3, for “Philological Secretary,” read “General Secretary”.

Regulations Consideration Annual Statement Accounts.

No. 1—line 5, for “Honorary Secretary,” read “General Secretary”.

„ 3—line 2, *id.*

Present regulations 1 and 2 have been transposed under sub-section “Bibliotheca Indica”.

The following papers were read:—

1. SIR J. C. COYAJEE.—(*Azi*) *Dahak in History and Legend.*
2. M. M. CHATTERJI.—*Brahmanism and Caste.*
3. KALIPADA MITRA.—*Side-light on ancient Buddhist Social Life.*

The following exhibit was shown and commented upon:—

1. THE GENERAL SECRETARY.—Two specimens of petrified wood found in Chittagong.

The President announced the result of the ballot for the election of the Ordinary Member and declared the candidate duly elected.

The President announced that unless special notice would be given there would be no Ordinary Monthly Meetings during the recess months of September and October.



NOVEMBER, 1929.

An Ordinary Monthly Meeting of the Asiatic Society of Bengal was held on Monday, the 4th, at 5-30 P.M.

PRESENT.

THE REV. A. WILLIFER YOUNG, Member of Council, in the Chair.

Members :

Acharya, Mr. P.
Ahmed, Capt. D.
Bose, Mr. M. M.
Chatterjee, Mr. P. P.
Chaudhuri, Dr. B. L.
Cohen, Mr. D. J.
Dikshit, Mr. K. N.
Dods, Mr. W. K.

Ghose, Mr. T. P.
Hobbs, Mr. H.
Insch, Mr. Jas.
Manon Mr. Johan van
Rao, Rao Bahadur M. V.
Ray, Kumar Sarat Kumar
Stapleton, Mr. H. E.
Watling, Mr. R. G.

Visitors :

Kundu, Mr. M. N.

Pal-Chowdhury, Mr. A. N.
Watling, Mrs. R. G.

The minutes of the last meeting were read and confirmed.

The General Secretary reported receipt of fifty-three presentations of books, etc., which had been placed on the table for inspection.

The General Secretary announced that the following candidates had been elected Ordinary Members during the recess months, September and October, under Rule 7 :—

(58) *Berthoud, George Felix*, Stock-broker, 7, Hungerford Street, Calcutta.

Proposer : Johan van Manen.
Seconder : Baini Prashad.

(59) *Singh, Jaipal*, Master of Arts (Modern Greats), St. John's College, Oxford University, Executive Assistant, Burmah-Shell; Bishop's House, 51, Chowringhee, Calcutta.

Proposer : N. Barwell.
Seconder : Johan van Manen.

(60) *Mitra, Mathura Nath*, Bachelor of Arts, Solicitor, 12-1, Old Post Office Street, Calcutta.

Proposer : M. M. Chatterji.
Seconder : O. C. Gangoly.

(61) *Cohen, D. J.*, M.L.C., Honorary Presidency Magistrate, Councilor, Corporation of Calcutta, Proprietor, Messrs. Moberly & Co., 6, Mangoe Lane; 11, Camac Street, Calcutta.

Proposer : U. N. Brahmachari.
Seconder : H. E. Stapleton.

(62) *Cotter, Gerald de Purcell*, B.A., Sc.D., M.Inst.M.M., F.G.S., Superintendent, Geological Survey of India, Indian Museum, Calcutta.

Proposer : W. A. K. Christie.
Seconder : Johan van Manen.

(63) *Campbell, G. R.*, Partner, Messrs. Mackinnon Mackenzie & Co., 16, Strand Road, Calcutta.

Proposer : U. N. Brahmachari.
Seconder : Johan van Manen.

(64) *Parry, Nevill Edward*, I.C.S., Deputy Commissioner, Garo Hills, Tura, Garo Hills, Assam.

Proposer: U. N. Brahmachari.

Seconder: Johan van Manen.

(65) *Mallya, Bantwal Ganapathy*, I.M.S., F.R.C.S.E., 10-4, Elgin Road, Calcutta.

Proposer: Baini Prashad.

Seconder: M. Sharif.

(66) *Kayath-Khoja, Lala Chand Lal*, I.C.B., N.U.T., F.R.H.S., Kaviraj and Medical Student, 77, Kailas Bose St., Calcutta.

Proposer: Baini Prashad.

Seconder: M. Sharif.

(67) *Jarvis, Robert Y.*, Consul of the United States of America, 9, Esplanade Mansions, Calcutta.

Proposer: U. N. Brahmachari.

Seconder: Johan van Manen.

(68) *Edwards, L. Brooke*, Manager in India, The Baldwin Loco. Works of Philadelphia, U.S.A., 5, Dalhousie Square, Calcutta.

Proposer: N. Ottens.

Seconder: Johan van Manen.

(69) *Halim, Abdul*, B.A., LL.B., Vakil, Rae-Bareli, Oudh.

Proposer: M. Hidayat Hosain.

Seconder: S. L. Hora.

(70) *Siddiqi, Mohammad Zubayr*, Sir Asutosh Professor of Islamic Culture, Calcutta University, Calcutta.

Proposer: M. Hidayat Hosain.

Seconder: Baini Prashad.

The following candidates were balloted for for election as Ordinary Members:—

(71) *Kurup, Pokiarath Chencheri Krishna*, Licentiate of the College of Physicians and Surgeons of Bombay, Member of the all-India Ophthalmological Society, Doctor of Optometry of the Royal Academy of Medicine (Lahore), Medical Officer, Taliparamba P.O., North Malabar (M.P.).

Proposer: M. Hidayat Hosain.

Seconder: S. L. Hora.

(72) *Gupta, Nirmal Kumar*, M.A., Professor of History, Jaggannath College, Dacca.

Proposer: U. N. Brahmachari.

Seconder: S. L. Hora.

The General Secretary reported the deaths of:—

(8) Sir Edwin Ray Lankester (An Honorary Fellow, 1899).

(9) Syed Abdul Latif (An Ordinary Member, 1909).

(10) W. H. Perkin (An Honorary Fellow, 1922).

The General Secretary reported the loss of membership during the recess months by resignation of:—

(24) H. A. Outhwaite (An Ordinary Member, 1926).

(25) C. T. Barber (An Ordinary Member, 1923).

(26) S. H. Lele (An Ordinary Member, 1926).

(27) Syed Aulad Hasan (An Ordinary Member, 1926).

- (28) J. Cunningham (An Ordinary Member, 1926).
- (29) C. Bhaskaraiya (An Ordinary Member, 1926).
- (30) Mrs. J. B. Bathgate (An Ordinary Member, 1926).
- (31) W. I. Keir (An Ordinary Member, 1920).

The General Secretary reported that the elections of :—

- (4) Dharendra Chunder Ghose (Elected on 4-2-29);
- (5) S. N. Chakravarty (Elected on 1-4-29);
- (6) Ziauddin Ahmed (Elected on 6-5-29);
- (7) G. S. Guha (Elected on 1-7-29);
- (8) S. L. Mitra (Elected on 1-7-29);
- (9) S. C. Gupta (Elected on 1-7-29) and
- (10) Prandhono Ghosh (Elected on 1-7-29),

had become null and void, under Rule 9.

In accordance with Rule 38, the General Secretary announced that the names of the following Ordinary Members would be suspended as defaulters within the Society's building for a period of a month, to be removed from the Society's registers for non-payment, unless the amount due be paid before the next Monthly Meeting :—

- (10) Dr. P. Nandi.
- (11) Dr. H. Suhrawardy.
- (12) Mr. J. L. Bhatnagar.
- (13) Mr. Mohammed Hamid.
- (14) Rev. J. C. Maury.

In accordance with Rule 40, the General Secretary announced that the names of the following Ordinary Members would be removed from the Society's member list :—

- (7) Dr. T. H. Bishop (Absent from July, 1926).
- (8) Mr. H. Fitzpatrick (Absent from July, 1926).
- (9) Sir Ewart Greaves (Absent from October, 1926).
- (10) Mr. S. E. Carritt (Absent from October, 1926).

In accordance with Rules 2 and 13, the General Secretary announced that the Council propose for election as an Associate Member of the Society, for a period of five years, Rai Bahadur Sarat Chandra Roy, M.A., and stated the grounds on which the recommendation was made, as follows :—

“Rai Bahadur Sarat Chandra Roy, M.A., B.L., of Ranchi, is the Editor of ‘Man in India’ and perhaps the foremost anthropologist in this country. His works on the tribes of Chota Nagpur are known and read and valued throughout Europe. It would do no less honour to the Society than to Mr. Roy to recognise his labours and I suggest that the fittest method would be to make him an Associate Member.”

In accordance with Rules 2 and 13, the General Secretary announced that the Council proposed for election as Honorary Fellows of the Society of :—

Sir R. N. Mookerjee, K.C.I.E., K.C.V.O. and Dr. Charles J. H. Nicolle.

The General Secretary stated the grounds on which the recommendation was made, as follows :—

"Sir Rajendra Nath fills a distinguished place in the intellectual life of Bengal and India, and has rendered special services to the Society.

An old Member of the Society (since 1898, for 31 years) he has served repeatedly on its Council and been its President in 1924 and 1925.

Sir Rajendra Nath has a brilliant record as a promoter of all intellectual movements in India and is a recognised authority in economic questions.

He has been the President of the Indian Science Congress and was the first President of the Institution of Engineers (India) and President of the Indian Industrial Conference (1911).

Further titles to distinction are :

One time President, Technical Schools Committee, Bengal.

One time President, Engineering Committee, Howrah Bridge.

President, Board of Trustees, Indian Museum, Calcutta.

President, Standing Committee, Court of Visitors, Indian Institute of Science, Bangalore.

Member, Governing Body, Bengal Engineering College, Sibpur.

Only Indian Honorary Life Member (of a total of seven such members) of the Institution of Mechanical Engineers of Great Britain.

Fellow of the Calcutta University.

One time Sheriff of Calcutta.

Member and some time President, Royal Industrial Commission.

Member, Royal Currency Commission.

Member, Indian Railway Committee, 1921.

Member, All-India Retrenchment Committee.

President, Bengal Retrenchment Committee.

Governor, Imperial Bank of India.

Member of a great number of other committees and commissions."

"Dr. Charles J. H. Nicolle, Nobel Laureate, Director of the Pasteur Institute of Tunis, Tunisia, is one of the Honorary Fellows of the Royal Society of Tropical Medicine and Hygiene. He was presented with a gold medal on the occasion of the celebration held in recognition of his completion of twenty-five years' service as Director of the Pasteur Institute of Tunis.

During these twenty-five years of arduous work, Dr. Nicolle made most important discoveries in connection with infantile Kala-azar, relapsing fever, measles, typhus fever and many other subjects.

He it was who first showed that typhus fever virus was inoculable to the chimpanzee and thence to the lower apes and to guinea pigs. He further proved that the louse was the vector of the disease and that the serum of convalescents conferred an immediate though not lasting immunity on those exposed to infection, observations which are of the greatest value in the control of epidemics.

He made serological researches in measles and demonstrated that the serum of the convalescents could give protection against this disease, a prophylactic measure which is becoming of increasing importance and practical value.

The additions Dr. Charles Nicolle has made to the knowledge of typhus fever and its epidemiology were recognised by the award to him of the Nobel Prize for Medicine for 1928."

The following papers were read :—

1. J. C. SINHA.—*Indo-American Trade, Past and Present.*
2. HARALU and J. H. HUTTON.—*Angami-English Dictionary.*
3. SRI RAM SHARMA.—*The Beginnings of the Suket Dynasty.*
4. W. IVANOW.—*Phonetics of colloquial Persian.*
5. L. BOGDANOV.—*Stray Notes on Kabuli Persian.*
6. U. N. BRAHMACHARI and J. M. DAS-GUPTA.—*A contribution to the Chemistry of certain new aromatic Antimonials.*
7. MM. HARAPRASAD SHASTRI.—*The Rg.-Veda in the making.*

The following exhibit was shown and commented upon :—

1. JOHAN VAN MANEN.—*Two wooden curved Images from Southern India.*

The Chairman announced the result of the ballot for the election of Ordinary Members and declared all candidates duly elected.

The General Secretary reported receipt of a donation of Rs. 400 from Sir R. N. Mookerjee for purchasing a new Edition of the Encyclopædia Britannica for the Society.

The General Secretary announced that a revised Edition of the Society's Rule Book had been issued and arrangements would be made to supply each of the members with a copy.

—♦— DECEMBER, 1929.

An Ordinary Monthly Meeting of the Asiatic Society of Bengal was held on Monday, the 2nd, at 5-30 P.M.

PRESENT.

RAI UPENDRA NATH BRAHMACHARI BAHADUR, M.A., M.D., Ph.D., F.A.S.B., President, in the Chair.

Members :

Agharkar, Dr. S. P.	Ghosal, Dr. U. N.
Asadullah, Mr. K. M.	Ghose, Mr. T. P.
Biswas, Mr. K. P.	Gurner, Mr. C. W.
Bivar, Mr. H. G. S.	Hora, Dr. S. L.
Chatterji, Mr. M. M.	Manen, Mr. Johan van
Chatterji, Mr. P. M.	Prashad, Dr. Baini
Chatterji, Mr. P. P.	Siddiqi, Dr. M. Z.
Chaudhuri, Dr. B. L.	Suhrawardy, Sir Z. R. Z.
Das, Dr. Kedarnath	Wadia, Mr. D. N.
De, Mr. K. C.	Watling, Mr. R. G.
Dods, Mr. W. K.	Young, Rev. A. Willifer

Visitors :

Chatterji, Mr. D. C.	Watling, Mrs.
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The minutes of the last meeting were read and confirmed.

The General Secretary reported receipt of seventeen presentations of books, etc., which had been placed on the table for inspection.

The following candidates were balloted for for election as Ordinary Members :—

(73) *Jacob, Joseph*, Export Department, Messrs. Andrew Yule & Co., S, Clive Row; 19, Loudon Street, Calcutta.

Proposer: A. Willifer Young.

Seconder: Baini Prashad.

(74) *Fisher, Frederick B.*, S.T.B., Ph.D., D.D., LL.D., F.R.S.S., Bishop, Methodist Episcopal Church, 3, Middleton Street, Calcutta.

Proposer: A. Willifer Young.

Seconder: Baini Prashad.

(75) *Khan, Matiur Rahman*, Landholder and Service holder, P.O. Lalmohan, Dt. Bakerganj.

Proposer: H. E. Stapleton.

Seconder: S. L. Hora.

(76) *Fawcus, Louis Reginald*, Indian Civil Service, United Service Club, Calcutta.

Proposer: W. A. K. Christie.

Seconder: Johan van Manen.

(77) *Chatterjea, Sivaprasad*, M.B., Medical Practitioner, 44-1, Grey Street, Calcutta.

Proposer: U. N. Brahmachari.

Seconder: S. L. Hora.

(78) *Thomas, H. W.*, F.C.S., M.P.S., Senior Partner and Chairman of the Managing Directors, Messrs. Smith Stanistreet & Co., Stanistreet House, 18, Convent Road, Entally, Calcutta.

Proposer: U. N. Brahmachari.

Seconder: Baini Prashad.

(79) *Maynard, The Rev. Bertram Martin* (King's College, London), Chaplain, Cawnpore, U.P.

Proposer: N. Barwell.

Seconder: S. L. Hora.

The General Secretary reported the deaths of:—

(11) Maharajah Sir Manindra Chandra Nandy of Cassimbazar (A Life Member, 1928).

(12) H. Beveridge (An Honorary Fellow, 1925).

(13) MM. Sadasiva Misra (An Associate Member, 1929).

The General Secretary reported the loss of Membership during the previous month by resignation of:—

(32) Miss M. I. Bealey (An Ordinary Member, 1928).

(33) S. K. Banerji (An Ordinary Member, 1926).

(34) E. H. V. Hodge (An Ordinary Member, 1926).

The General Secretary reported that the election of:—

(11) Dr. Jarl Charpentier (Elected on 7-1-29),

had become null and void, under Rule 9.

The General Secretary reported that Major S. L. Mitra, whose name was announced as lapsed under Rule 9, had since regularised his position, and that in consequence the entry had been rescinded.

The General Secretary reported that the second application for Institutional Membership had been received from the Adyar Library, Madras, which had been accepted by the Council.

The General Secretary reported that the Council had nominated Rai Upendra Nath Brahmachari Bahadur to serve as the representative of the Society on the Board of Trustees of the Indian Museum, *vice* MM. Haraprasad Shastri, resigned.

In accordance with Rule 38, the General Secretary announced that the names of the following members, which had, since the last Ordinary Monthly Meeting, been suspended as defaulters within the Society's building, had now been removed as defaulters from the registers for non-payment of dues :—

- (10) Dr. P. Nandi.
- (11) Dr. Hassan Suhrawardy.
- (12) Jagmohan Lal Bhatnagar.
- (13) Md. Hamid.
- (14) Rev. J. C. Manry.

The General Secretary reported that, in accordance with Rule 4 of the Medal Regulations, the Council had appointed Advisory Boards for the Medal for this year to be as follows :—

Barclay Memorial Medal.

Dr. S. L. Hora, *Ex-officio*.
Lt.-Col. R. Knowles.
Dr. G. E. Pilgrim.
Dr. S. P. Agharkar.

Joy Gobind Law Memorial Medal.

Dr. S. L. Hora, *Ex-officio*.
Lt.-Col. R. Knowles.
Dr. Baini Prashad.
The President.
The General Secretary.

In accordance with Rules 2 and 13, the President called for a ballot for the election as Honorary Fellows of the Society of :—

- 1. Sir R. N. Mookerjee, and
- 2. Dr. Charles J. H. Nicolle,

and as an Associate Member of :—

- 1. Rai Bahadur Sarat Chandra Roy,

proposed for election in the last Ordinary Monthly Meeting.

The following papers were read :—

- 1. H. C. DAS-GUPTA.—*Bibliography of Pre-Historic Indian Antiquity.*
- 2. C. W. GURNER.—*Development of the Ritusamhara Theme in the Ramayana.*
- 3. M. M. CHATTERJI.—*Monasticism and Brahmanism.*

4. CHINTAHARAN CHAKRAVARTI.—*Some meteorological Proverbs of the people of Bengal.*
5. D. C. CHATTERJI.—*The Hetutattvopadesha.*
6. B. B. DATTA.—*Testimony of early Arab Writers on the Origin of our Numerals.*
7. K. K. BASU.—*The House of Tughlaq.*
8. J. P. MILLS and J. H. HUTTON.—*Ancient Monoliths of North Cachar.*

The following exhibit was shown and commented upon:—

1. THE GENERAL SECRETARY.—*An ancient Monolith of North Cachar.*

The President announced the result of the ballots for the election of Ordinary Members, Honorary Fellows and the Associate Member, and declared all candidates duly elected.

Letter of Friar Arnold, a German Franciscan in China
(1303-1305 ?)

Translated and discussed by the REV. H. HOSTEN, S.J.

I. "In his *Chronica*, written about the middle of the 14th century, John Vitoduranus (of Winterthur), O.F.M., writes of a certain Friar Minor 'of the parts of Lower Germany', who went to the parts of the infidels among whom he reaped much fruit. The Chronicler had read 'a long and detailed' letter 'addressed by him to his General of the Northern Vicariate', whence he gathered and extracted that that Friar had converted 'to the faith of Christ through the waters of baptism and the salutary word of preaching much people in the empire of the Great Kan, Emperor of the Tartars.' Then follows the account of the missionary's labours and success.

"Two problems face us here: (1) Who was that Friar 'from the parts of Lower Germany?' (2) What connection is there between his relation or letter and the letters of John of Monte Corvino?

"The first question is easily solved: for John of Monte Corvino himself, in his first letter (Golubovich, III. 88), speaks of 'Friar Arnold, a German of the Province of Cologne', who reached him in 1303, and who, no doubt, is the same as in John of Winterthur. More serious is the other problem: for, according to the Chronicler, this Friar Arnold attributes to himself whatever John of Monte Corvino relates of himself in his first letter. Now, as we cannot easily admit deceit in the missionary, the Chronicler himself must rather be regarded as the author of the confusion.

"The text of the relation in John of Winterthur has been published frequently: C. Eccardus, *Corpus scriptorum mediæ ævi*, I, Lipsiae, 1723, col. 1895-1897: G. von Wyss, *Iohannis Vitodurani Chronicon*, Zürich, 1856, in: *Archiv für schweizerische Geschichte*, XI. 1856, 208-210; Golubovich, I, c. III. 160 sq., and finally in the recent edition of F. Baethgen, *Die Chronik Iohannis von Winterthur* (M.G.H., *Scriptores rerum Germanicarum*, Nova series, tomus III), Berlin, 1924, 232-235. Cf. also R. Streit, *Bibl. Miss.*, IV. 44 sqq."¹

II. "John Vitoduranus (*Winterthur*, in modern Switzerland)

¹ Cf. P. Livarius Oligier, O.F.M., in *Acta Ordinis Fratrum Minorum... Primo Sinarum Apostolo et Archiepiscopo Ioanni a Monte Corvinodicata....* Ad Claras Aquas prope Florentiam, Ann. XLVII, Julii 928, Fasc. VII, p. 225.—We shall refer to these *Acta* by "*op. cit.*"

appears to have been born in the first years of the 14th century. Of his life we know only what he says of it himself in his *Chronica* or what we can infer from it. He became a Friar Minor, perhaps in the convent of Zürich; later, he was at times at Basle and Lindau. He died perhaps at the time of the plague or Black Death, which in that country began in 1348. He wrote his *Chronica* between 1340 and 1348, beginning with Innocent III and Frederic II. For the earlier period he copied some authors; for the later period, he described, or drew from documents, the history of his time and country. Though he did not professedly, as we say, write the history of the Order of the Friars Minor, he recounts, however, in connection with it many things relating to its domestic affairs and foreign missions, and even to the Far East. These were collected by Golubovich, II. 143-150. For the editions of the *Chronica* see above, No. 3, and Streit, *Bibl. Miss.*, IV. 79.”¹

III. “Summary: Relation of Friar Arnold of Germany, the companion of Friar John of Monte Corvino. (1)

“A few years before the abovesaid events, (2) a certain Friar of the Order of St. Francis, born in the parts of Lower Germany went abroad to the parts of the infidels, to evangelize Christ. (3) I read his letter, a long and detailed one, addressed by him to his General of the Northern Vicariate. (4) He worked there praiseworthily, reaping rich fruit of souls. For, as I gathered and extracted from his letter, he converted to the faith of Christ through the waters of baptism and the salutary work of preaching much people in the empire of the Great Kan, Emperor of the Tartars; nay, he would have reaped very great fruit of souls, if Nestorian heretics, or false Christians, who had become numerous there, had not opposed him. (5) For, jealous of their successful work, (6) they resisted him as much as they could. By calumnies, false detractions, (and) flattery they excited at times against him some of the elders of that country, and wickedly caused scourgings, imprisonments, and divers chastisements to be inflicted on him before the powerful ones during several days and years: all of which he bore patiently for Christ. (7)

“After some time, the Great Kan, who loved him dearly, seeing him punished, though innocent, being condemned to a tower or to close custody, freed him mercifully from captivity and all his trials, restoring him to liberty, and threatening with severe punishments those who thereafter should molest him in word or deed. (8)

“Living some years in the Eastern and Northern parts, perhaps VIII or IX (years) after entering them, he had learned so perfectly the language of that country or people that he

¹ Idem, *ibid.*, p. 229.—No. 3 is our 1 above.

could powerfully and boldly sow therein the word of God. He also made so much fruit and profit among the people through his preachings that often, within the space of a month or a week, many thousands of people flocked to him to be baptised. (9)

"As he declares in the letter, the Gospel of Christ had never been preached before in the places where he had preached: for, although we read of the blessed Thomas that India, which had fallen to him by the lot of preaching, in great part believed through him in Christ, and through two Roman boys, in the time of Pope Silvester and Constantine the Roman Emperor, as is read in ecclesiastical history, yet, as he says, to the places where he evangelized Christ no Catholic came before him to lay the foundations or at least the first stone of the orthodox faith. Before him no graft, nay, not a small plant of the Apostolic faith grew there; but, himself the first to sow there broadcast the seed of Christian doctrine on good ground, rent with the ploughshare of preaching and compunction, he reaped a rich harvest of believers, or of converts to Christ. (10)

Being a diligent and unwearied labourer in the vineyard of Christ and the Lord's field, he bore home sheaves, not of a few converts, but of many thousands. He also converted to Christ Prester John, a rich and powerful king, (11) of whom much that is exaggerated is read among us in a little book, (12) and through him (he converted) his whole nation. (13) But, alas! after his death, which was ruinous for Christian discipline, they returned to the vomit of their paganism, being compelled by his successor, a very wicked idolater and a tyrant; and the aforesaid Friar was not able to call the wandering and lost sheep back to the pen or sheepfold of the faith, because he was too far away from that kingdom, living in the dominions of the Great Can, lord of lords, more than XX or XXX stages away. (14)

"This oft-named Friar bought XI children, born in the country, (15) and taught them the Latin letters and grammar; (16) but, finally, after feeding them with milk and pottage, food proper for children, he gave them solid meat, teaching them music and the sacred page; they also learned so perfectly the canonical hours and the chant that they were able to sing them excellently in choir alternately. (17) Some of them also, more talented and voiceful than the rest, led the choir grandly. (18) The Great Can took very great delight in their singing: hence, he often called the aforesaid Friar, their master and teacher, asking him to bring with him four or six of them and to give him pleasure with their singing; and he, willingly complying, and trying to satisfy and please him therein, would take with him by turns four, six, or eight of the aforesaid boys, and, appearing at the royal court, he would often with

their sweet melody give him no small joy and gladness, thereby heartily delighting him and his (courtiers) and wonderfully recreating them. (19)

"For this reason, and by the simple purity of his life and his holy and praiseworthy conversation, that Friar found so much favour in the eyes of the oft-named prince that in all his needs he felt (he possessed) in him a kind and special friend." (20)

"(From the *Chronica* of Friar John Vitoduranus, O.F.M., in our *Biblioteca*, t. III. pp. 160-161.)" Cf. P. Girolamo Golubovich, O.F.M., in *Acta Ordinis Fratrum Minorum*, *op. cit.*, pp. 203-204.

IV. *Comments on III.*—1. Like Fr. Oliger, Yule and Moule, I am puzzled by Friar John of Winterthur's summary. It is supposed to come from Friar Arnold's letter, and the events related are attributed to him, though they can belong only to Friar John of Monte Corvino. The greater part of the narrative tallies with Monte Corvino's first letter, *i.e.*, the letter dated from Cambalec, in the kingdom of Cathay, January 8, 1305. (Cf. Yule, *Cathay*, I. (1866), 197-203.) That letter is not particularly long or detailed. It covers the period 1291-1305 of Monte Corvino's travels and work. We have another letter of Monte Corvino, dated Cambalec, Quinquagesima Sunday, February, 1306 (February 13, 1306). From this letter, addressed to the Vicar-General of the Order of Friars Minor and to the Vicar of the said Order and to the Master of the Order of Preachers, and to the Friars of either Order abiding in the Province of the Persians, we learn that his letter of 1305 was addressed to the Father Vicar and the Friars of the Province of Gazaria, and that he had asked the said Vicar to send a copy of it to the Friars Minor and the Friars Preachers to whom his second letter was addressed; they had, in fact, he had learned, received his first letter, the messenger having gone on from Sarai to Tauris.¹ We can gather also from that second letter that, if Monte Corvino had written letters from China before 1305 (none is known to exist), they had not been received; neither had he received any letter from Brother of the Order or friend for 12 years, *i.e.*, from 1292 or 1293 (*ibid.*, I. 204). As the Province of Gazaria was called *Vicaria Tartariae Aquilonaris* and it had the two Custodies of Gazaria (Crimea) and Sarai (Old Sarai: Selitrenoje, near the Volga and the Caspian Sea), one might think that the letter seen by John of Winter-

¹ Note the extreme rapidity: between January 8, 1305, and February 13, 1306, a messenger had gone from Pekin to Sarai and Tauris, and news had already reached Pekin that the letter had been delivered at Tauris. Monte Corvino's letter of February 13, 1306, travelled equally fast: by July 23, 1307, it was at Poitiers, where the Pope referred to some of its contents in a bull. (Golubovich, *op. cit.*, p. 196. 198, or *JRAS*, 1914, pp. 560-589.)

thur and addressed to the General of the Northern Vicariate (*de Vicaria Aquilonari*) was the first letter of Monte Corvino, dated 1305. John of Winterthur's summary covers that first letter mostly, without encroaching on Monte Corvino's second letter of 1306. It is, indeed, possible that, since the letter of 1305 mentions Friar Arnold, a German of the Province of Cologne, John of Winterthur, himself a German, attributed wrongly to Friar Arnold Monte Corvino's letter and doings. On the other hand, John of Winterthur's summary contains not a few details not found in Monte Corvino's two letters of 1305 and 1306. These details appear to me to exceed the limits of an ordinary comment or strict summary. To explain these additions and the differences of wording maintained throughout, one feels obliged to suppose that there was a letter by Friar Arnold. He had joined Monte Corvino at Cambalec (Pekin). January 8, 1305, was within the second year of their meeting. On the latter date Friar Arnold may have been still with Monte Corvino. He too might have availed himself of the return of a friend, attached to the court of the Lord Kathan Khan (*ibid.*, I. 204), to write a letter to the General of the Northern Vicariate. That letter would naturally have covered much the same ground as Monte Corvino's, if it was a summary of Arnold's conversations with Monte Corvino. It would have spoken of Monte Corvino in the third person, and John of Winterthur's error would consist in his having replaced Monte Corvino by Arnold. In this supposition John of Winterthur's wording and his disposition of the matter can more easily be understood to differ from Monte Corvino's letter of 1305.

In our further comments we neglect Yule's translations from Wadding's inferior text, and help ourselves with the study of A. C. Moule in *JRAS.*, 1914, pp. 533-599, and 1921, pp. 83-115. Only after making our own translation on Fr. Golubovich's text of John of Winterthur's *Chronica* did we note that Moule has that text (*JRAS.*, 1914, pp. 568-571) and a translation. He followed, however, Eccard's text, while Golubovich followed the text of von Wyss, which he considered better.

2. Fr. Golubovich notes: "Previously he wrote of the Friars Minor martyred at Tana in 1321". Yule has the same thing (*Cathay*, I (1866), 173). Moule (*JRAS.*, 1914, p. 568) has: "very vaguely, A.D. 1330".

3. Moule says diffidently of John of Winterthur's *Chronica*: "It contains probably a reference to the German Brother Arnold, John of Monte Corvino's earliest companion at Khan-balig." (*JRAS.*, 1914, p. 567.) We cannot reasonably say that John of Winterthur perhaps thought that Monte Corvino was of Lower Germany, although the letter from which he quoted was Monte Corvino's first letter. Not only does it

mention "Friar Arnold, a German, of the Province of Cologne", but it begins with the words: "I, Brother John of Monte Corvino". (*ibid.*, 1914, p. 547.)

4. "Pascal of Vittoria, whose letter of 1338 is translated by Colonel Yule (*Cathay*, I. (1866), pp. 231-37), speaks of 'Gazaria in the Vicariat of the North, and in the empire of the Tartars', and again of 'Sarray, a city of the Saracens of the Tartar empire, in the Vicariat of the North'." (Moule in *JRAS.*, 1914, p. 568.)

5. "I have also baptized there [at Khanbalig], as I reckon, up to this time about six thousand persons; and, if the above-named slanders had not been made [by the Nestorians], I should have baptized more than thirty thousand". (Monte Corvino, January 8, 1305, in *JRAS.*, 1914, p. 577.)

6. Golubovich explains 'their' (*eorum*) by supposing it refers to the converts mentioned in the previous sentence. This explanation does not appear to be natural. The successful labours would naturally be ascribed to the missionary. Did the original letter not have at this place *felicibus nostris actibus* instead of *felicibus eorum actibus*: "our successful labours", the word *our* implying Monte Corvino and Friar Arnold? Moule, following Eccard, has *eorum* (*JRAS.*, 1914, p. 569); von Wyss prints *ejus*, but says the MS. has *eorum* (*JRAS.*, 1921, p. 114.)

7. In Monte Corvino's letter (January 8, 1305) there is no allusion to flatteries, scourgings, imprisonments, and divers chastisements extending over several days and years. His words are: "And so the Nestorians aforesaid, both directly and through others whom they bribed, have brought on me persecutions of the sharpest: declaring that I was not sent by the lord Pope, but was a spy and magician and impostor; and after some while they produced other false witnesses who said that another messenger had been sent with presents of immense value to the Emperor, and that I had murdered him in India and stolen what he was carrying. And these intrigues went on for about five years, so that many a time I was dragged before the judgment seat with the ignominy [of threats] of death." (Moule in *JRAS.*, 1914, p. 577.)

In his second letter of February 13, 1306, Monte Corvino says he will not rehearse the facts mentioned in his first letter. "And the first thing is about the persecution of the Nestorians. The second about the church and the completion of the houses." (*JRAS.*, 1914, p. 582.) The second letter does not appear to have said more of the persecution of the Nestorians. A bull of Clement V, apparently dated Poitiers, 23 July in the second year (1307: *JRAS.*, 1914, pp. 560; 589) knows not only Monte Corvino's first letter, but also his second letter of February 13, 1306, since it refers to the pictures of the Old and New Testament with which he had decorated his church

(cf. also the text of the bull in Ceccarelli, *JRAS.*, 1921, p. 98); of the persecutions endured by Monte Corvino, it knows only as much as the first letter tells us: "And then, reaching the upper parts of a great prince, king of the Tartars, after many and various persecutions and snares, and wrongs inflicted on you by Nestorian heretics, and not a few false accusations and buffetings of trials (and) insults, like a faithful athlete of Christ and very brave champion, thanks to Him by whose order kings reign and princes rule, the truth was discovered and for the sake of the said faith you deservedly found great favour with the said great king." (*JRAS.*, 1921, p. 577; the text is very corrupt.)

About 1330, John of Cora, the supposed author of *De l'estat et de la gouvernance du grant Kaan de Cathay*, relates how the Nestorians of Khanbalig pulled down during the night what Monte Corvino was erecting while building his houses and churches. (Cf. Yule, *Cathay*, I. (1866), 249.)

8. Monte Corvino says only (January 8, 1305): "At last, by God's providence, through the confessions of certain individuals, the Emperor came to know of my innocence and the malice of my rivals, and sent them with their wives and children into exile". (*JRAS.*, 1914, p. 577.) How very differently this is expressed by John of Winterthur! It is hardly credible that he extracted what he says from Monte Corvino's letter. Had he not before him a letter of Friar Arnold, justifying him in his allusion to a year's long captivity in a tower?

I translate *quandoque* by 'after some time'. Moule translates it by 'at length' (*JRAS.*, 1914, p. 596).

9. Monte Corvino's letter of January 8, 1305, has: "I have a competent knowledge of the Tartar language and character, which is the usual language of the Tartars; and I have now translated in that language and character the whole New Testament and Psalter, and have had them written in their fairest character; and I understand the language and read, and preach openly and in public, as if it were in testimony of the law of Christ." (*JRAS.*, 1914, p. 580.) The baptisms conferred by January 8, 1305, at Khanbalig alone, were 6,000 (*ibid.*, 577); between All Saints' Day, 1305, and February 13, 1306, he had baptised 400 persons (*ibid.*, 585). "From the time in which I have been in Tartary in Cathay I have baptised several thousands". (Letter of February 13, 1306; *ibid.*, 583.) In their letter to the Pope (1336) the Alans said that their nation had been united to the Roman See by Monte Corvino. Marignolli (1342) says the same of 30,000 of them, after some stay among them. (Yule, *Cathay*, II. (1866), p. 336.)

How could John of Winterthur make out from Monte Corvino's letter that he had acquired the language perfectly after "perhaps 8 or 9 years", that he had lived in the Eastern and Northern parts, and had often in a week or a month been

asked by thousands of people to baptise them? A letter of Bishop Peregrine (Zayton, December 30, 1318) says that King George in one day converted several thousands of his people. (*JRAS.*, 1921, p. 111.)

10. On January 8, 1305, Monte Corvino says only, of the places where he then was, *i.e.*, Cathay or Khanbalig (Pekin), occupied exclusively by Nestorians in former times: "To these regions there never came any Apostle or disciple of the Apostles". (*JRAS.*, 1914, p. 576.) He must be speaking of Cathay, or of China and Cathay. In his letter of February 13, 1306, he speaks of a solemn deputation from Ethiopia which had requested him to go to Ethiopia or to send preachers; since the time of Blessed Matthew and his disciples "they had not preachers to instruct them in the faith of Christ, and they have a great desire to attain to the true faith of Christ" (*ibid.*, 585). It is supposed that this embassy met Monte Corvino in India, presumably in South India, between 1291 and 1293, during the thirteen months he spent in India after his departure from Tauris (Tabris) in 1291. It is also supposed by some that this deputation came from Sokotra. (Cf. Yule, *Cathay*, I. (1866), 168.) The Dominican who presented to Philip of Valois in 1330 a work in which he discussed the means of recovering the Holy Land, states that, during the 24 years of his residence among the infidels, he had visited an island of the Indian Sea, which, according to Yule, appears to be Sokotra. (*Cathay*, I. (1866), 191.) Could this Dominican have been Friar Jordanus of Severac? The subject of the memorial presented to Philip of Valois lay dear to him and he too had contemplated going or sending Friars to Ethiopia (*ibid.*, I. 227. 229-230). He writes from India in 1321: "I have been told by our Latin merchants that the way to Ethiopia is open for anyone who wishes to go and preach there, where once St. Matthew the Evangelist did preach. I pray the Lord that I may not die until I have been a pilgrim for the faith into those regions, for this is my whole heart's desire" (*ibid.*, I. 227). From Tana he wrote in 1223 or 1324: "I must say a word as to the voyage to Ethiopia, which it would be fitting that some Friar willing to go thither to preach should undertake. He might go thither at small cost from the place where I now am, and, from what I have heard, it would be a glorious journey for the diffusion of the faith" (*ibid.*, I. 229-230). The great objection is that in his *Mirabilia*, written between 1328 and 1330, Jordanus does not refer to any visit of his to Sokotra. He had, however, visited Greater Arabia, but not Ethiopia.

The reflections regarding St. Thomas in India and the two Roman boys, *i.e.*, Edesius and Frumentius (they were from Tyre), are not likely to come from Monte Corvino or Friar Arnold. They are not in any copy of Monte Corvino's

first letter or in his second letter, and, even after Friar Arnold's arrival, the Mission at Peking was extremely poor in books, as Monte Corvino's first letter shows.

What is said of St. Thomas, and chiefly of the two boys supposes scholarship or the help of books. *India, quae sibi in sorte praedicationis advenerat*, is a textual quotation or reminiscence from some Church History. India fell by lot to St. Thomas, according to the Syriac and the Greek Acts of Thomas (*Ind. Antiq.*, 1903, p. 3; M. R. James, *The apocryphal New Testament*, 365). A similar expression is used by Rufinus, *Hist. Eccles.*, lib. 1, cap. 9, about St. Thomas and Parthia (*Ind. Antiq.*, 1903, p. 13), also by Socrates in his Ecclesiastical History, bk. 1, ch. 19 (*Ind. Antiq.*, 1903, p. 14) and by Origen, according to Eusebius (*Hist. Eccles.*, bk. 3, ch. 1, in *Ind. Antiq.*, 1903, p. 6).

An equally clear quotation is discoverable in the story of the two Roman boys, which must rest on the Ecclesiastical History of Rufinus, bk. 1, ch. 9. Rufinus says not only that, at the division of the world, in view of the work of preaching, Parthia fell to Thomas by lot and Ethiopia to Matthew, but that no one before the time of Constantine had touched with the ploughshare of apostolic preaching (*nullus apostolicae praedicationis vomere impresserat*) the Ulterior India visited by Metrodorus, which same India Rufinus seems to have considered as the field cultivated by Edesius and Frumentius. John of Winterthur or his missionary borrowed doubtless from Rufinus his own expression "*vomere praedicationis scissam*" which he applies to the country evangelised by the missionary. Neither Rufinus nor the Roman Martyrology mentions the reign of Pope Sylvester for the time when the two Roman boys were in India. Pope Sylvester reigned from 314 to 335, and Constantine from 306 to 337. Edesius and Frumentius were taken prisoners, apparently at Axum, on the Red Sea, about 316. In or after 328, Frumentius was consecrated a bishop by St. Athanasius of Alexandria; till after 365 he was the apostle of the Abyssinians. It does not seem possible to bring Edesius and Frumentius to our present India even for the period of their captivity.

John of Winterthur professes to quote a missionary in the passage: "as he says, in the places where he evangelised Christ no Catholic came before him to lay the foundations or at least the first stone of the orthodox faith". The quotation, not traceable in Monte Corvino, embraces perhaps also the next sentence. "No Catholic came before him" differs widely from John of Winterthur's previous statement: "The Gospel of Christ had never been preached before in the places where he had preached." The latter assertion is not correct: the Nestorians, who had been there before Monte Corvino, were Christians, though not orthodox. More correct, at least for

Cathay and Khanbalig, sound the words of Monte Corvino: may "To these regions there never came any Apostle or disciple of the Apostles". (*JRAS.*, 1914, p. 576.)

Moule (*JRAS.*, 1914, p. 547) makes on the last sentence the following reflection: "This sentence, coming from one [Monte Corvino, as Moule supposes] who had spent a year at the Church of St. Thomas in India, has an interesting bearing on the question of the date at which the legend of St. Thomas' mission to China originated." He makes a similar reflection in connection with John of Winterthur's corresponding passage. (*JRAS.*, 1914, p. 568.) On the other hand, he notes (*JRAS.*, 1921, p. 114): "Cathay and China were probably two quite distinct countries in the mind of John of Monte Corvino". St. Thomas' travels to China are mentioned in the Romo-Syrian Breviary, in the Office of St. Thomas on July 3 (cf. Yule, *Cathay*, I. (1866), lxxxix n. 1), and that Office is pre-Portuguese and apparently of the 4th or 5th century. Perhaps, Monte Corvino had not heard even in South India that St. Thomas had been in China. He may however have distinguished, as suggested by Moule, between Cathay and China. To one going to China, as Monte Corvino, the subject of St. Thomas' preaching is likely to have been mentioned at Mylapore. Had Monte Corvino disbelieved the Malabar tradition on the point, in view of the fact that the only Christianity he saw in China was Nestorianism, his disbelief in St. Thomas' travels should have extended to our India, where the same Christianity existed as in China, and probably Monte Corvino believed in the Malabar tradition regarding St. Thomas' tomb at Mylapore. He buried "in the Church of St. Thomas the Apostle" Friar Nicholas of Pistoia. That means the Church of Mylapore, and in the language of the time, the Church containing St. Thomas' traditional tomb. In a letter about India, which some consider as of doubtful provenance, he says that Maebar is in the territory of St. Thomas. (Yule, *Cathay*, I. (1866), 212.)

Fr. Golubovich (*op. cit.*, p. 194, col. 2) makes a serious mistake when he states that Monte Corvino built at Mylapore the first Latin Church and buried in it Nicholas of Pistoia. There existed a Church of St. Thomas at Mylapore before Monte Corvino's arrival, as we know from Marco Polo, who relates about it a story of 1288. Besides, Monte Corvino's words are: "And I was in the country of India, at the Church of St. Thomas the Apostle, XIII months" (*Et fui in contrata Indie ad Ecclesiam Sancti Thome Apostoli mensibus XIII*). He adds of Nicholas of Pistoia: "He died there and was buried in the same church". (Cf. Golubovich, *op. cit.*, p. 200, col. 1; Moule differs slightly, *JRAS.*, 1914, pp. 546. 576; Yule differs more in *Cathay*, I. (1866), 197.) If it is thought surprising that the Nestorians of Mylapore should have let

Monte Corvino bury his companion in their church, we can say that Monte Corvino uses "the Church of St. Thomas" as synonymous with the place where stood the Church of St. Thomas. There was still in 1521 at Mylapore a cemetery in which pilgrims who died at Mylapore used to be buried. It was within a cross-bow shot or two from the Church of the tomb.

11. Monte Corvino says on January 8, 1305, that he converted in Cathay King George, "of the family of that great King who was called Prester John of India" (*JRAS.*, 1914, p. 579). The words "of India" are missing only in the Chigi MS. (*JRAS.*, 1921, p. 86). Moule (*JRAS.*, 1914, 568) says of John of Winterthur's account: "The confusion between King George and Prester John is carried a step further by the statement that John of Monte Corvino had converted Prester John; but perhaps the writer had read Marco Polo, who says: 'Et de ceste provence en est rois un dou legnages au Prestre Johan, et encore est Prestre Johan, son nom est Giorgie.' (*Recueil de voyages*, tom. I, p. 74.)" Does the confusion, if confusion there is, not come from a letter by some one else than Monte Corvino, *i.e.*, by Friar Arnold? Odoric of Pordenone (1325-28) also refers to Tozan as the chief city of "Prester John," meaning apparently King George's successor.

12. To what small book known in Europe does John of Winterthur or his missionary refer? How did John of Winterthur know that much in it was exaggerated? Monte Corvino does not allude to the subject. Plano Carpini (1246-47) says nothing of Prester John. Rubruquis (1253-55), far from exaggerating, opposes the exaggerations of the Nestorians: "And in a certain plain among those mountains dwelt a certain Nestorian who was a mighty shepherd, and lord over all the people called Naiman, who were Nestorian Christians. And when Coir Cham died, that Nestorian raised himself to be King (in his place), and the Nestorians used to call him King John, and to tell things of him ten times in excess of the truth. For this is the way of the Nestorians who come from those parts of the world; out of a mere nothing they will spin the most wonderful stories.... In this way great tales went forth about this King John." (Yule, *Cathay*, I. (1866), 177.) Rubruquis says that it had been falsely stated that Sartach, Mangu Cham, and Ken Cham were Christians. Hayton I, King of Armenia, alleged that Sartach was a Christian (*ibid.*, I. cxxviii; 177). Exaggerated too is the letter of Sempad, Constable of Armenia and brother of Hayton I, who travelled in Tartary in 1246-50 (*ibid.*, I. cxxvii, n. 2). Odoric of Pordenone (1325-28) states, after seeing the people of Prester John at Tozan, that not one-hundredth part was true of what was said of Prester John.

13. The words of Monte Corvino are: King George

"brought over a great part of his people to the true Catholic faith". (*JRAS.*, 1914, p. 579.)

14. Monte Corvino says: "The brothers of this King George, since they were perfidious followers of the errors of Nestorius, subverted after the King's death all whom he had converted, taking them back to their former schism. And because I was alone and was unable to leave the Emperor the Khan, I could not go to that Church, which is twenty days' journey distant." (*JRAS.*, 1914, p. 579.) Instead of King George's brothers, schismatics, John of Winterthur speaks of his successor, an idolater, a tyrant. He thinks George's subjects returned to idolatry, instead of to schism. He also makes the distance between Khanbalig (Pekin) and George's town, which seems to have been Tozan, *i.e.*, Tung-shêng (*JRAS.*, 1914, p. 599; 1921, p. 599), 20 or 30 days instead of 20 days only. Let us note, however, that the Paris MS. and Wadding have XX days, while the Chigi MS. has XXX days! (*JRAS.*, 1921, p. 87.)

Would a serious historian substitute himself to his sources, as John of Winterthur must have done, if his source was Monte Corvino's letter? I cannot well admit Yule's opinion on John of Winterthur's account: "It seems pretty certain that what the chronicler had seen was merely a copy of Monte Corvino's letter. There are one or two slight circumstances in the chronicle which are not mentioned in that letter, but they look very like such amplifications as would be natural in such a case." (Yule, *Cathay*, I. (1866), 173.) The Chronicler differs from Monte Corvino's letter all along, at least in his way of expressing himself, and repeatedly he differs in circumstances more than slight. The greatest difference comes at the end, and it cannot be explained away.

If King George's residence at Kosang or Tozan (Tung-shêng, as Paul Pelliot thinks in *T'oung-Pao*, December, 1914, pp. 634-635) was to the north of Khanbalig, John of Winterthur's statement that the missionary had been "in the Eastern and Northern parts" would be justified, but the statement could not have come from John of Winterthur. That passage in John of Winterthur belongs clearly from the context to Monte Corvino's labours in Cathay, and not, as Fr. Golubovich interprets it (*op. cit.*, p. 192), to his work in Armenia, Persia, etc., between 1279 and 1289.

In one of the bulls of Clement V (dated Poitiers, July 25, 1307?), we have a passage speaking of the eastern and upper parts evangelised by Monte Corvino, which appears to refer to Monte Corvino's labours in Cathay only. "You betook yourself in person to the eastern parts of the infidels. And in the lands of the lord (of a lord?), of the Tartars, the grace of the Holy Spirit favouring you, you brought back (*reduxisti*) faithfully and zealously to the faith of Christ very many of the

infidels through the waters of baptism. And then, reaching the upper parts of a great prince, king of the Tartars, after many and various persecutions and snares and wrongs inflicted on you by Nestorian heretics. . . ." (the rest as in my comment 7). (Cf. *JRAS.*, 1921, p. 98, where the Chigi MS. has *domini Tartarorum*; 1914, p. 560, where the Paris MS. has *dominij Tartarorum*.) The Pope speaks of recent information brought to his notice and referring to Monte Corvino's past labours. His information, as the bull shows, is taken from Monte Corvino's two letters. Was there not also a letter by Friar Arnold speaking of Monte Corvino's labours in the eastern and northern parts of Cathay, a distinction not found in Monte Corvino's letters? If the Pope's allusion to a reduction to the faith does not mean the reduction of King George's people, many of whom may have been Christians only in name before they were baptised by Monte Corvino (John of Winterthur represents them as returning to idolatry instead of to schism), the Pope has not a word of praise for that great success of Monte Corvino. The difficulty now shifts to the use of the word 'eastern' for George's territory, and 'upper' for Khanbalig. Monte Corvino's reduction of George's subjects belongs to the very beginning of his stay in Cathay; only after that did he go to Khanbalig to reside there more permanently.

15. Moule writes of John of Winterthur's chronicle: "We notice that the correct number of John's foundlings, forty, is preserved as against all the printed texts of the letter." (*JRAS.*, 1914, p. 568.) Wadding has "150" boys; the Paris MS. has xl, like John of Winterthur's chronicle; the Chigi MS. has *quadraginta* (forty). (Cf. *JRAS.*, 1921, p. 86.) Wadding may have read cl by mistake for xl.

16. John of Monte Corvino says (January 8, 1305): "I instructed them in the Latin letters and in our rite (method? ritual?)." Eleven of the boys already knew the Office, and several were writing out Psalters and other books. (*JRAS.*, 1914, pp. 547, 577-578.) It does not follow that these boys, who, when bought, were between 7 and 11 years old, knew Latin. John of Winterthur adds, however, that they were also taught grammar: again a notable variant. A greater variant is Wadding's: "I instructed them in the Latin and Greek letters after our manner (*Informavi eos litteris Latinis, & Graecis ritu nostro*)". (*JRAS.*, 1921, p. 86, note 1.) Wadding alone speaks of Greek letters, and one does not see of what use they could be.

Pope Clement V must also have had special information not derived from Monte Corvino's two letters, both of which were known to him. In a bull of July 27, 1307, the Pope, addressing John of Monte Corvino, says: "(You made) a convent of boys whom in their childhood you bought *with alms given you by the faithful*, and by the sacrament of baptism

you joined them to the unity of the faithful, and teaching them sufficiently the *Latin language* and a knowledge of the Latin letters, you instructed them properly and praiseworthy in the ecclesiastical office according to the rules of the Roman Church, and *with the Lord's assistance you wisely ordained them (promovente domino salubriter ordinasti)*. These brothers or clerics, fervently intent on keeping the commandments of God, sing the praises of God in the Church, and in a foreign country they sound and cause to resound a hymn from the canticles of Syon." (*JRAS.*, 1921, p. 98.) The parts we have italicised are without equivalent in Monte Corvino's letters. In his second letter we read only that he had received from a wealthy merchant, Peter or Petrutius de Lucalongo (Lucolongo, Luca-gango), who had accompanied Monte Corvino from Tauris in 1291, the site on which he built his second Church at Khanbalig, and that benefactors helped him in putting up his second convent on that site. Monte Corvino's letters do not say that he gave the minor orders to some of his boys. He must, however, have had episcopal powers, since he had gone to the East as a Papal Legate, and since he had raised to the minor orders King George, who served his mass wearing sacred vestments. He also says that his boys were not "priests". The passage we have quoted from the Pope's bull is only in the Chigi MS. (*JRAS.*, 1921, p. 98), and though that MS. is part of a collection by the forger Alfonso Ceccarelli, we see no reason to regard it as spurious.

17. "Eleven boys already know our office and have the choir and the weeks, as in a convent, whether I am present or not, and several of them write out Psalters and other useful things (*opportuna*)....And with (this) convent of infants and sucklings I perform the divine office. However, we sing by rote (*secundum usum*), because we have no office with the notes." (Monte Corvino, January 8, 1305; *JRAS.*, 1914, p. 548.)

18. This might be John of Winterthur's lawful comment on the words: "(they) have...the weeks (*edomadas*).". One of the boys would for a week lead off at parts of the singing; another would take his place the next week, and so on in turn.

19. Monte Corvino says only (January 8, 1305): "And the lord Emperor is greatly delighted at their chanting. I ring the bells at all the hours, and with (this) convent of infants and sucklings I perform the divine office." (*JRAS.*, 1914, p. 548.) This supposes that seven times a day the singing was heard. At Khanbalig he had finished a church six years before, and had built for it a belfry with three bells (*ibid.*, 547). In 1305 he began another church within a stone's throw of the Lord Khan's door. It was not finished yet on February 13, 1306, but would be completed in the summer. There was, however, in the new convent an oratory able to hold 200

persons. "And we in our oratory sing the office regularly by ear, because we have not the notes. The Lord Khan can hear our voices in his chamber (bed-chamber: Chigi MS.); and this wonderful fact is published far and wide among the heathen, and will have a great effect, as the Divine mercy shall dispose and fulfil. From our first church and residence to the second church which I have since built, is a distance of two miles and a half inside the city which is very great. And I have divided the boys, and placed in the first (church) part, and part I have established in the second; and they perform the service by themselves. But I, as chaplain, celebrate in either Church by weeks, for the boys are not priests" (*ibid.*, 583: letter of Monte Corvino, February 13, 1306).

Since it is not likely that Friar Arnold was not a priest, we should conclude that some time between January 8, 1305, and February 13, 1306, if not earlier, he had left Khanbalig, perhaps for some new mission in parts of Cathay where there were already Christians. Had there been a second priest at Khanbalig, one would have resided at each of the two churches.

The passage of John of Winterthur, on which we comment, adds so much here to Monte Corvino's two letters and is so precise that we cannot consider it lawful comment on these two letters. John of Winterthur must have had other material at his disposal, and, as that other material was a single letter, "long and detailed", and covering mostly the same ground as John of Monte Corvino's first letter, we are forced to suppose that this long and detailed letter was also written about January 8, 1305, but by another, *i.e.*, by Friar Arnold.

Moule writes: "We seem to have some fragments of the original letter (by Monte Corvino, as Moule supposes) preserved for us which would otherwise be lost, for the statement that John used to be summoned to appear before the Khan, taking with him four or six or eight of his choristers, cannot be explained as a summary or even as a vague recollection of any part of either of John's letters as they now exist." (*JRAS.*, 1914, p. 568.) This is well said, but it does not go far enough. Many copies of Monte Corvino's letters were made. We are told so explicitly for his first letter. (*JRAS.*, 1914, p. 551; 581; 1921, p. 89.) Yet the passage in question is not in Wadding, nor in the Chigi MS., nor in the Paris MS., all of which resemble one another so closely for the text of Monte Corvino's two letters as to preclude the supposition that our passage once belonged to them. It is true that in none of these authorities do we find the request which Monte Corvino's second letter says was contained in the first: that the Father Vicar and the Friars of the Province of Gazaria should send a copy of the first letter of January 8, 1305, to the addressees of his second letter, the Friars of Tauris; but such a request, written perhaps separately, may not have been forwarded

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from Gazaria or Tauris, or may not have been considered part of the letter itself by the copyists in Europe.

Monte Corvino's appearing with his choristers at the court of the Great Khan would have been perfectly natural, judging from the proximity of the church to the Khan's palace, the nature of these Eastern potentates, and the fact that Monte Corvino had his place at the court, with right of entrance and of sitting, as the Pope's Legate. (Monte Corvino, February 13, 1306: *JRAS.*, 1914, p. 584.) Friar Odoric (1325-28) says of the festivities at the Khan's palace: "We Minor Friars have a place assigned to us at the Emperor's court, and we be always in duty bound to go and give him our benison." (Yule, *Cathay*, I. (1866), 133.)

20. This paragraph follows naturally the previous sentence; but again Monte Corvino's two letters do not prepare us for such high praise of the Emperor, and John of Winterthur had seen only one letter by a missionary.

Fr. Golubovich must have omitted some words at the end. Cp. his *quod eum propitium et singularem amicum in cunctis suis necessitatibus gratiosissime sentiebat* (*op. cit.*, p. 204, col. 2) with Moule's text taken from Eccard: *quod eum propitium patronum, protectorem, and quasi praeceptum & singularem amicum in cunctis suis necessitatibus sentiebat*, i.e., "that he used most gratefully to regard him as a kind patron and protector, and as it were a chief and particular friend in all his necessities." (*JRAS.*, 1914, pp. 571, 598.)

In judging of John of Winterthur's text and its dependence or independence from Monte Corvino's letters, we must consider not less what it leaves unsaid than what it says. It omits interesting portions of Monte Corvino's letters, for instance his work in India.

Whatever explanation we devise, we have not explained the difference between John of Winterthur's "20 or 30 stages", or the "30 stages" of the Chigi MS., and the "20 stages" in Wadding and the Paris MS. (cf. our comment under our number 14.)

ST. JOSEPH'S COLLEGE, DARJEELING,

December 21, 1928.

N.B.—Though it does not belong to the subject treated in this article, I place on record here a reference to some Missionaries who went to China, and who are not mentioned in Yule's *Cathay*. I find it in Léon Janssen's *Malaca, l'Inde Méridionale et le Cathay*, Bruxelles, C. Muquardt, 1882, fol. 66r, where Manoel Godinho de Eredia writes, after stating that Mansin (Mahāsina) or China was governed by Marsarsis or Marsalis, who erected churches there in 1268: "E no anno seguinte a requerimento de Coblai Tartaro, por ordem de P. P. Gregorio

X, passarão de Roma ao Cathay 2 sacerdotes theologos de Ancona, chamados Nicolas e Guilherme. E Garibay, na sua Istoria Pontifical, tratta de Fr. Anselmo com seus companheiros, religiosos da ordem dos Pregadores, que, por licença do P. P.º Inocencio V.º passarão a empreza do Cathay. E sobre esta Christandade escreve S. Antonino." (And the next year, at the request of Coblay the Tartar, by order of Pope Gregory X, there passed from Rome to Cathay two theologians, priests, from Ancona, called Nicolas and William. And Garibay, in his Pontifical History, speaks of Friar Anselm and his companions, Religious of the Order of Preachers, who with leave of Pope Innocent V. went to the emprise of Cathay. And St. Antoninus writes about this Christianity.)

What is known of these Missionaries? What says Garibay?

Gregory X, elected Pope on September 1, 1271, arrived from the Holy Land at Viterbo on February 2, 1272, and accepted the papal dignity, taking the name of Gregory X. He died on January 10, 1276.—Innocent V, elected on January 21, 1276, died on June 22, 1276.

**Letter of Friar Peregrine, second Bishop of Zayton, China.
(December 30, 1318)**

Translated and discussed by the REV. H. HOSTEN, S.J.

1. "This document, preserved only in the Chigi Codex, I. VII. 262 (now in the Vatican Library: cf. below No. 9), is described by Golubovich, II. 139-141, who also published the text of this letter (III. 195-197), (p. 226) though he judges it spurious. That Codex is, indeed, a forgery of the well-known Alfonso Ceccarelli. But the problem of the authenticity of the document is complicated, because the codex contains in fact some authentic texts: that being so, it is not impossible that Peregrine's letter be genuine. The contents of the letter are not such that one should declare it spurious; on the contrary, there are in it things which speak in favour of its authenticity. The forger could hardly have given it in everything the local and chronological colouring. A writer may, therefore, prudently use this document, since it is not proved to be spurious.

"Friar Peregrine was one of the six Bishops who on July 23, 1307, were sent to the help of Friar John of Monte Corvino. In *Bullarium Franciscanum*, V. 39, he is called Peregrinus de Castello. With the other five Bishops he started on his journey to China and appears to have reached Cambalec between 1309 and 1310. On the death of Friar Gerard, the first Bishop of Zayton (Tceu-tung, in China), he was appointed his successor, and, as such, on December 30, 1318, he wrote the letter in question, addressing it "to the Vicar of the Minister General and the other Brothers of the Vicariate of the Orient." In it he speaks of the state of the Church of Cambalec and of his own Church. Both are in very good condition, but evangelical labourers are wanting. Friar Peregrine died on July 7, 1323, according to the information sent by his successor Friar Andrew of Perugia (cf. No. 5), which Golubovich published (III. 307)."¹

Father Joseph M. Pou y Marti, O.F.M., says of this letter: "In the Chigi Codex I. VII. 262, now in the Vatican Library, we have a certain letter of Friar Peregrine de Castello, which the good Bishop of Zaitun would have written at his see on December 30, 1318. This letter appears to lack sufficient

¹ Cf. P. Livarius Oliger, O.F.M., in *Acta Ordinis Fratrum Minorum... Primo Sinarum Apostolo et Archiepiscopo Ioanni a Monte Corvino... dicata* ... Ad Claras Aquas prope Florentiam, Ann. XLVII, Julii 1928, Fasc. VII. pp. 225-226. We shall refer to these *Acta* by "*op. cit.*"

critical basis, so that no reliable information can be derived from it for the history of that Mission." ¹

II. In *JRAS.*, 1921, pp. 110-112, the Rev. A. C. Moule published from the Chigi Codex I. VII. 262, fols. 102 v^o-103 r^o, the Latin text, without giving a translation. As, in my opinion, this letter deserves to be more widely known and vindicated as genuine, I shall translate it here from Moule's text. I have not seen the text published in Fr. Girolamo Golubovich's *Biblioteca*, III. 195-197.

LETTER. (1)

To the Reverend Fathers in Christ, Brother N., Vicar of the Minister General, and the other Brothers of the Vicariate of the Orient, (2) Brother Peregrine, established by poverty a bishop in another world, (tenders) reverence and (wishes) health, (being himself) eager to hear news of the world of the faithful. And, if I and my companions had acted like the prodigal son, and had like others fled to a distant country, our Religion, a kind mother, ought at least to remember her sons, whom she destined to an unheard-of exile: for a mother's bowels (*JRAS.*, 1921, p. 111) do not harbour against a son the severity of justice, and below (*et infra*). (3) I am a bishop, albeit unworthy, and below (*et infra*). (4) And Father Brother Andrew of Perugia, the Bishop, and I, we arrived at Gabalech. (5) Therefore, I speak first of the Archbishop Brother John. His outward life is good, and hard, and severe. Now, as regards that King George, it is certain that he converted him fully and praiseworthy to the true faith, whereas formerly he mixed with the Nestorians. And the King himself in one day converted several thousands of his people. And, had he lived, we should truly have brought low before Christ all his people and kingdom. And a great change would have been effected also in the Can. (6) But, before Brother John, the Archbishop aforesaid, came to the empire of the Great Can, no Christian, whatever was his condition and nation, could succeed in erecting even the smallest oratory (7) and sign of Christ (8), owing to the power of the Nestorians, who prevented it. And thus they were either forced to follow them in their schismatic and erroneous rite, or walk as it were in the way of the infidels. But, after his arrival, Brother John erected several churches with the help of God (and in spite of) the ill-will of the Nestorians. (9) And the other nations of Christians who hate the Nestorian schismatics followed Brother John, and chiefly the Armenians, who now build for themselves a beautiful church and intend giving it to him. Accordingly, he has left the church of the Latins

¹ *Op. cit.*, 221, col. 2. Fr. Pou y Marti adds in a note, p. 221, col. 2: "It was published by the forger Alfonso Ceccarelli. Cf. Golubovich, *Biblioteca*, III. 194-197. On Alfonso Ceccarelli's falsifications, for which he was executed in 1583, see Fiumi, *L'opera di falsificazione di A. Ceccarelli*, Perugia, 1902."

to the other Brothers and is himself continually among them (the Armenians). (10) In the same way, some good Christians, who are called Alans (*Alani*), and who receive from the Great King payment for XX thousand, have recourse to Brother John, themselves and their families. And he comforts them and preaches to them. (11) Nor do we see... (12) and we can preach to them (*istis*) and minister the sacraments of the Church. (13) Now, as regards the infidels, we can preach freely, and we preached several times in the mosque (*moscheta*) of the Saracens, to obtain their conversion. (14) Similarly in the great cities (we preach) to the idolaters through two interpreters (acting as) intermediaries. (15) Many gather, and they wonder greatly, and carefully inquire about these things (*de istis*). And, as the work is now begun, we have good hope, seeing the people eager to hear, and to run where we preach. Truly, we think that, if we had their languages, the wonders of God would be manifested. (16) The harvest is very great, (*p. 112*) but the labourers are few and without a sickle. (17) For we are few Brothers, and very old, (18) and unfit for learning the languages. God spare those who prevent the Brothers from coming. (19) Truly, I think that the enemy does this, lest we invade his empire, which he possesses without trouble. At Cambaliche there are the Archbishops (20) and Brother Andrew of Perugia, (21) and Brother Peter of Florence, (22) bishops, and nothing is wanting to them in temporal things. And, as for spiritual things, I think they never had so much (of them). The Holy Spirit rushed and came upon these (*istos*) two Bishops, and accordingly (*in tantum*) they are intent in prayers and holy meditations. And (it is) the Spirit of God who visits and consoles them, and (who) so greatly (*fovent: for fovet?*) inflames (them) that they seem to be forgetful of all things, standing before the Lord day and night in holy vigils.

And I, having been made Bishop of Cayton (*cayfensis*), (23) can serve God there peacefully and tranquilly with three devout Brothers. (*fol. 103 r°*). And these servants of God (are) Brother John Grimaldi, Brother Emanuel de Monticulo, and Brother Ventura of Sarezana, who became a Brother in these (*istis*) parts. (24) They are well strengthened in every virtue. God is honoured through them. Would we had with us a hundred such. In the city of Cayton we have a good church with a site which a certain lady of Armenia left to us, and she provided for us and for others, should they come, the necessities of life. (25) And outside of the city we have a beautiful place with a wood, where we wish to make cells and an oratory. (26) We are not in need of anything else than Brothers, whom we long for. Brother Gerard the Bishop is dead, (27) and we, the other Brothers, cannot live long, and others have not come. The church will remain without baptism and without inmates.

If I were to write the news and the conditions of this

(*istius*) great empire, how great its power is, how great its armies, the greatness of the country, how many its revenues, how many its expenses, how great the alms they give, it would not be believed. Our Latins have (28) compared it in these things with all the other kings of the world, but I do not write the excess. The great city of 'Ayton, where we are, is near the sea, and it is about a three months' journey from the great (city) of Cambalioth. (29)

Dated at Zayton, on the third before the Kalends of January, (December 30), in the year of the Lord 1318.

III. *Comments on II.*—1. The Rev. A. C. Moule writes (*JRAS.*, 1921, pp. 109-110): "The most interesting addition to the documents hitherto known is the following letter from Bishop Peregrine of Zaitun. It is, of course, easy to suspect it of being spurious. The style is awkward and unnatural, though not so ungrammatical as that of the Papal Bulls already given; and the fact that its existence seems never to have been suspected by any of the historians of the Minor Friars until this century is a very serious objection to its being genuine. If it is proved that the compiler derived all the rest of his Cathay material from *P.* (a), the case against the letter will be even stronger. A considerable part of the subject-matter might have been invented with no great ingenuity from the letters of John (b) and Andrew (c), the passage about King George, who had been murdered twenty years before, seeming specially (p. 110) clumsy. But it is fair to remember that it was John's letters about King George which had caused Bishop Peregrine to be sent to Cathay; he calls him "*that King George*," and seems hastening to assure his friends that John's wonderful story was really true. The passages about the Armenians and the Alani could not be derived directly from any document known to me, but they are not either impossible or improbable, and the general truth of what is said about the Alani is confirmed by an extant letter from their own chiefs. (Cf. this *Journal*, January, 1917, pp. 13. 31.) The date, which seems to have surprised Golubovich, is perfectly possible and natural, and the fact that no attempt is made to conceal its glaring inconsistency with the same date (1318) wrongly written in Andrew's letter a few lines lower down on the same page is in its favour. Of the persons named in the letter John, and Andrew, and King George would be ready to the forger's hand; Peter of Florence would need far wider reading for his discovery, but he is a real person and might easily have been in Khanbalig in 1317-18; Johannes Grimaldi, Emanuel de Monticulo, and Ventura de Sarzana do

(a) *P*=Paris MS., Bibliothèque Nationale, MS. Latin 5006, fol. 170 v°, col. 2—fol. 186 v°, col. 2. Cf. *JRAS.*, 1914, pp. 543-567.

(b) John of Monte Corvino, whose letters are of Khanbalig (Pekin), January 8, 1305, and February 13, 1306.

(c) Andrew of Perugia, whose letter is of Zayton, January, 1326.

not seem to be in Wadding's Index, list of martyrs, etc., nor in the *Bullarium Franciscanum*, though that does not prove that their names are invented. It is clear that many besides the few whose names we know reached China during the first half of the fourteenth century."

I have not seen Fr. Golubovich's reasons for declaring spurious the letter of Bishop Peregrine. Father Oliger is inclined to consider it genuine. Moule gives very good reasons in its favour. What interest might have actuated a forger to piece together, from two known letters, and amplify a spurious letter for the sake of a forgotten Franciscan Bishop in China, more than two centuries earlier than Ceccarelli? The letter in question is found in the midst of other matter on China, which is found equally in Wadding and the Paris MS., and in these other materials the Chigi MS. does not sufficiently differ from Wadding and the Paris MS. to let us suspect a forgery for the letter of Bishop Peregrine which is special to it. The Chigi MS. differs too much from the Paris MS. to let us think that one derives from the other. Both have in common much of the same incorrectness, which makes us conclude they derive both from an incorrect original, not necessarily the same. Neither has tried to remove the incorrectness of the original, which argues in favour of their common honesty. The Paris MS. has portions not found in the Chigi MS., and *vice versâ*. The China missionaries must have written many more letters than are found in Wadding and the other Franciscan historians. We cannot be surprised that some of these have survived in unexpected quarters, chiefly if emanating from a bishop. We are rather surprised that more have not been found these fifty years.

I can little understand how a forger would have dared to collect in a spurious letter so many facts and dates not otherwise known to us or him, and of little consequence to both, when any day his MS. was likely to be discovered and published and shown spurious eventually through the yet unpublished archives of the Order. Not less surprising is it that with all the means at their disposal the Franciscans of Quaracchi are not able to disprove the statements contained in the letter. The great reason for suspicion, and possibly the only one, is that Ceccarelli was proved to be a forger in other directions.

Why is the passage on King George declared clumsy? Or the style of the letter awkward and unnatural? The too short success of Monte Corvino at King George's capital may have surprised people in Europe. In letters received from Europe Bishop Peregrine may have been asked to dispel doubts. Monte Corvino does not in fact appear to have recovered his position at the capital of King George. When Friar Odoric passed through his town in 1325-28, he had nothing to say of Friars residing there. He seems to have consoled his readers by telling

them that King George was not by far as great a personage as Prester John had been described to be.

2. The expression "Vicariate of the Orient" does not occur in other parts of the Chigi MS., nor is it found in the Paris MS. It can be justified, but how was it known to Ceccarelli?

The Eastern Vicariate of the Franciscans or Vicariate of Eastern Tartary comprised the Empire of Constantinople, Asia Minor, and the whole Persian Empire, in other words the countries south of the Black Sea and the Caucasus. It had three Custodies: the Custody of Constantinople with seven convents or more, the Custody of Trebizond with four convents, and the Custody of Tauris with twelve convents or more. (Cf. Golubovich, *Onomasticon geografico illustrativo delle carte dell' Oriente Francese* (Secoli XIII e XIV). Extract from t. II of *Biblioteca Bio-Bibliografica della Terra Santa e dell' Oriente Francese*, Firenze, 1913, p. 571.) On January 8, 1305, Monte Corvino asked the Vicar of the Province of Gazaria (*i.e.*, of the Vicariate of the North, at Sarai) to forward a copy of his letter to the Friars Minor and Friars Preachers at Tauris. His second letter of February 13, 1306, was addressed to the Vicar of the Minister-General of the Order of Minor Friars and to the Vicar Master of the Order of Preachers, and to the Brothers of either Order dwelling in the province of the Persians. (Cf. *JRAS.*, 1914, pp. 581-582.) That meant the house of Tauris. For letters sent from Zayton, on the sea, and a three-months' journey from Khanbalig the route chosen would naturally be the sea route round India, whence the letters would soonest reach Europe through Tauris. Did Ceccarelli think of this?

3. "And below." In the Chigi MS. we find elsewhere *et infra* (*JRAS.*, 1921, p. 102). We have also *&cetera*. Cf. *JRAS.*, 1921, pp. 100, 101 (twice). *Et infra* seems to indicate that a passage has been omitted. In the Chigi MS. we have *et infra* in the letter of Andrew of Perugia (*JRAS.*, 1921, p. 102), where the Paris MS. (*JRAS.*, 1914, p. 564) has *infra sequitur* (and below follows), and the Assisi MS. has *& infra pluribus verbis pretermisissis sequitur* (and below follows after several words omitted). Cf. *JRAS.*, 1921, p. 115.

4. "And below" at this place indicates more clearly that a passage has been omitted.

5. Friar Andrew of Perugia writes from Zayton in January, 1326: "You will have learnt then how with Brother Peregrine of blessed memory, my fellow Bishop and the inseparable companion of my travels, after much labour and weariness, hunger and various inconveniences and perils by land and by sea alike, in which we were plundered of everything and even of our tunic and cassocks, I came at last by the help of God to the city of Khanbalig, which is the seat of the rule of the great Khan, in the year, as I believe, of the Lord's incarnation MCCCXVIII." *JRAS.*, 1914, p. 593.) The date 1318 must be a mistake. We

have it also in the Paris MS. and in the Assisi MS. (*JRAS.*, 1921, p. 115). Wadding replaces it by MCCCVIII (1308). (Cf. *ibid.*, 1914, p. 564, n. 1.)

On July 23, 1307, Friar Andrew of Perugia was appointed with Friar Peregrine as a suffragan Bishop of the newly erected archiepiscopal see of Khanbalig. Five other Franciscans, according to the Paris MS., the Chigi MS., and the author of *De aetatibus*, were nominated to the same dignity on the same occasion. We get altogether eight names by combining different authorities, perhaps because one of them, William of Franchia or of Villanova did not start. The Chigi MS. names altogether only four out of seven: William the Frenchman, Nicholas of Apulea, former Minister of the Province of St. Francis, Andrew de Guidonis of Perugia, and Peregrine de Castello. It omits Gerard, Peter de Castello, Andrutius of Assisi, and Ulric de Seyfridsdorf. We know from Andrew of Perugia's letter (January, 1326) that three of these bishops died in Lower India: Nicholas of Bantia, Andrutius of Assisi, and another, who must be Ulric de Seyfridsdorf, since Gerard reached China and William the Frenchman was still in Europe in 1308 and 1318. Petrus de Castello, of whom nothing is known and who is found only in Wadding, is perhaps the result of a splitting up of 'Peregrinus de Castello' into 'Peregrinus' and 'Petrus de Castello.'

From the letter of Andrew of Perugia and of Peregrine we should conclude that Gerard, who would have been the only other surviving bishop after Lower India, did not travel with Andrew and Peregrine. A forger might have arranged to make a spurious letter of Peregrine agree with the letter of Andrew of Perugia, but where was the profit?

The Paris MS. (*JRAS.*, 1914, p. 561) says that very many Friars left with the bishops appointed in 1307. That passage is missing in the Chigi MS., yet Ceccarelli has the names of three Friars at Zayton in 1318, who are not known from other sources.

Golubovich (*op. cit.*, 221, col. 2) adopts Wadding's date 1308 for the arrival of Bishop Andrew and Peregrine at Khanbalig. He also makes Bishop Gerard assist at Monte Corvino's episcopal consecration and at the imposition of the pallium (*op. cit.*, 221, col. 1). How do we know that Bishop Gerard was present? Andrew of Perugia does not mention him as present on that occasion. Was not Monte Corvino already a Bishop, since he had given the minor orders to King George, apparently the first year of his stay in Cathay (1293 or 1294)?

Moule proposes 1313 for the arrival of Andrew and Peregrine in Khanbalig (*JRAS.*, 1914, p. 564, n. 1). The reason he gives is that Andrew of Perugia spent five years at Khanbalig and was four years at Zayton by July 7, 1322. The death of three bishops, co-travellers of Andrew and Peregrine, in Lower India, in a certain very hot country, and the death, perhaps on the

same journey, "of several other Friars who died and were buried there" (*JRAS.*, 1914, p. 567) would seem to indicate some delay in India. Andrew's description of the toils of the journey implies a long journey, and so does the word "finally" with which Andrew announces his arrival at Khanbalig' (*JRAS.*, 1914, p. 564).

A clever forger should have seen that the date of Peregrine's letter, December 30, 1318, clashes with the date, 1318, given by Andrew of Perugia for his and Peregrine's arrival at Khanbalig. The writer of the Chigi MS. wrote the latter date some 20 lines lower, on the same page as the former. A forger would have changed the lower date, if he maintained the upper one, or the upper one, if he maintained the lower one. He did not change the lower date, because he found it so in the MS. before him, since the Paris MS. and the Assisi MS. also have it. Why then did he not change the date December 30, 1318, and make it later, if he used Friar Andrew's letter merely to forge a letter for Peregrine? Will those who declare the letter spurious say that the forger did not remark the inconsistency or would not have tried to conceal it? Between the arrival of Andrew and Peregrine at Khanbalig in 1318 and Peregrine's letter of December 30, 1318, a forger should have seen that he could not place the arrival of Bishop Gerard, consecrated in Europe in 1307 with Andrew and Peregrine, his reign and death as Bishop of Zayton, the succession of Bishop Peregrine, and also the arrival of Bishop Peter of Florence, consecrated in Europe on December 20, 1310. Between the arrival of Bishop Andrew and Peregrine at Khanbalig in 1318, and Peregrine's death on July 7, 1322, he found in Andrew's letter of January, 1326, Andrew's five years' stay at Khanbalig and his stay of about four years at Zayton. He let stand a wrong date, 1318, for Andrew's and Peregrine's arrival at Khanbalig, though he should have seen it was wrong. He let it stand on the strength of a faulty MS. From his honesty in this matter, we should argue to the correctness of the date December 30, 1318, and the genuineness of the letter.

I would favour Moule's suggestion that 1313 marked the arrival of Andrew and Peregrine at Khanbalig. For Wadding's date 1308, which Golubovich accepts (*op. cit.*, 221, col. 2), Oliger proposes 1309-10 (*op. cit.*, 226, col. 1). How does Golubovich fill for Bishop Andrew the interval after 1308? He supposes him: (1) at Khanbalig in 1308-13, according to Andrew's statement that he was five years there; (2) nowhere in particular, during Bishop Gerard's rule at Zayton, which he thinks occupied perhaps the next five years (therefore, in 1313-18); (3) at Zayton (?) until the death of Bishop Peregrine (therefore in 1318-22); (4) Bishop of Zayton from 1326 to 1328 (*op. cit.*, 221). Oliger and Pou y Martí, Golubovich's confrères, who for reasons to me unknown place Peregrine's death on July 7, 1323 (*op. cit.*, 221, col. 2; 226, col. 1) instead of on July 7, 1322 (as in Wadding,

the Paris MS. and the Chigi and the Assisi MS.; cf. *JRAS.*, 1921, p. 103, n. 7; 115),¹ make Andrew of Perugia succeed Peregrine in the see of Zayton in 1323. There is, I think, ample time, between 1313 and December, 30, 1318, to place Gerard's incumbency as first Bishop of Zayton and Peregrine's succession as second Bishop of that see. By the time of his death, July 7, 1322, Peregrine had held the see of Zayton "not many years" (*paucis annis*), as Andrew of Perugia states (*JRAS.*, 1921, p. 103).

Barring the date of Peregrine's death we have no reliable date for a number of facts of the same period: the arrival of Andrew and Peregrine, the arrival of Bishop Gerard, his appointment to the see of Zayton, his death, the appointment of Bishop Peregrine to the see of Zayton, the appointment and death of Andrew of Perugia, the arrival of Peter of Florence, his appointment as fourth Bishop of Zayton and his death. Mere luck could have guided a forger's date, December 30, 1318, safely through this labyrinth of wanting dates.

The spellings of Khanbalig in the Chigi MS. are: (1) Gabaliensem urbem (*JRAS.*, 1921, p. 85); (2) Cabaliech (*ibid.*, p. 86); (3) Cambaliech (89); (4) Chambalieth (94); (5) Archiepiscopum Cambaliensem (97); (6) in civitate Cabalech (98); (7) Cambalensem civitatem (102); (8) Cabalech (103); (9) Cambalech (103); (10) Cabaliensis sedis (105).

In the Paris MS. the corresponding spellings are: (2) Cambaliech (*JRAS.*, 1914, p. 547); (3) Cambaliech (*ibid.*, 551); (4) Cambaliech (557); (5) Archiepiscopum Cambaliensem (559); (6) in civitate Cambalien. (560); (7) Cambaliensem civitatem (564); (8) Cambaliech (566); (9) Cambaliech (566); (10) Cambaliensis sedis (567).

In the Paris MS. spellings 2, 3, 4 come from the letters of Monte Corvino; spellings 7, 8, 9, 10 come from the letter of Andrew of Perugia, both missionaries; the other spellings come from chroniclers and the Papal Bulls.

Compare the spellings of the Chigi MS. for Peregrine's letter: Gabalech (*JRAS.*, 1921, p. 111); Cambaliech (112), Cambalieth (112).

Gabalech is equalled by No. 1 of the Chigi MS.; Cabalech by its Nos. 6, 8, 10 and by its Caballensibus (*JRAS.*, 1921, p. 99). If we suppose that a nasal stroke over the first *a* of Gabalech and similar forms has dropped out, we reduce the spellings of the noun in the Chigi MS. to Cambalech, Gambalech, Cambaliech, Cambalieth, Chambalieth. The Paris MS. has regularly an *i* after *l*, and never *-eth*. Its only form for the noun is Cambaliech. That comparison alone goes some way to show that the Chigi MS. is independent of the Paris MS.

¹ Why does Moule place an interrogation mark after 1322 in *JRAS.*, 1921, p. 103, when he does not in *JRAS.*, 1914, pp. 566-594?

The different spellings in Peregrine's letter (Chigi MS.) are such as the carelessness of a copyist, accustomed to other forms, would produce; they are not necessarily the studied variants of a forger, nor do they appear to have been borrowed designedly from his own spellings in the letters of Monte Corvino and Andrew of Perugia.

6. The Latin is: *Et etiam magna canis mutatio facta fecisset. Fecisset* must be a misreading of *fuisset*. *De l'estat... du grant Kaan* (1328-34) says: "It is believed that if they (the Nestorians) would agree and be at one with the Minor Friars, and with the other good Christians who dwell in that country, they would convert the whole country and the emperor likewise to the true faith." (Yule, *Cathay*, I. (1866), 249.)

7. This statement is not to be derived from the other materials in the Chigi MS. It agrees, however, with *De l'estat... du grant Kaan de Cathay*, now generally attributed to John of Cora, and written between 1328 and 1334: "And when that Archbishop of whom we have been speaking (John of Monte Corvino) was building those abbeys of the Minor Friars aforesaid, these Nestorians by night went to destroy them, and did all the hurt that they were able. But they dared not do any evil to the said Archbishop, nor to his Friars nor to the other faithful Christians in public or openly, for that the emperor did love these and showed them tokens of his regard." (Yule, *Cathay*, I. (1866), 249.) Monte Corvino's first church at Khanbalig was built six years before January 8, 1305. During five of the twelve years that he had passed at Khanbalig before January 8, 1305, he had been subjected to the false accusations of the Nestorians. On February 13, 1306, he had in another place of the town, near the Khan's palace, a house and an oratory for 200 persons, and he hoped to finish the next summer the church he had begun on the same site.

8. A cross on an oratory.

9. From his other materials the author of the Chigi MS. could know only that Monte Corvino had built by 1306 two churches at Khanbalig, and a church at the town of King George, which had been lost to the Mission at George's death (1298). The author of *De l'estat... du grant Kaan* (1328-34) refers to three houses of the Franciscans built by Monte Corvino at Khanbalig, within two leagues of one another, and to two houses at Zayton. (Cf. Yule, *Cathay*, I. (1866), 247-248.) The third house or church at Khanbalig was perhaps the church, which, as Peregrine's letter (1318) states, the Armenians were building and intended giving to Monte Corvino. The letter adds in fact that he had relinquished the church of the Latins to other Friars and had gone over to the church of the Armenians. As he had two churches at Khanbalig by 1306, we might understand by the church of the Latins relinquished by Monte Corvino the church near the palace, of which he had made his cathedral

after his consecration as Archbishop, some time after 1307. Cf. Marignolli in *Cathay*, I. (1866), 341.

10. The author of the Chigi MS. could not know from his other materials in that MS. that there were at Khanbalig Christians of different nations other than Nestorians and that they were at enmity with the Nestorians. From the letter of Andrew of Perugia (1326) he could know only that an Armenian lady had given to the Friars land and a church at Zayton. The presence of a considerable colony of Armenians at Khanbalig and Zayton is not at all surprising. They were great merchants in those days, represented in the great ports of India and the Far East. An Armenian skipper took Friar Odoric of Pordenone (1323 ?) from Tana to Quilon. (Yule, *Cathay*, I. (1866), 72.) A pre-Portuguese copper-plate with a cross, half destroyed with rust, had been found in a ruined underground oratory at Malacca by 1610. (Cf. Léon Janssen, *Malacca, l'Inde méridionale et le Cathay*, Bruxelles, 1882, fol. 152, and p. 12.)

If Ceccarelli was acquainted with *De l'estat... du grant Kaan* (1328-1334), which does not appear, he could know from it only that besides the Nestorians there were other Christians in China, good ones, who followed the Friars Minor. He could not have learned from it that they were of other nationalities and of which. (Yule, *Cathay*, I. (1866), 249.)

How, moreover, could a forger have known that, before the arrival of John of Montecorvino (1293), there were Christians in China, other than the Nestorians, whom the Nestorians had prevented from putting up the smallest oratory and sign of Christ? We think of the Armenians. Those of Khanbalig seem to have had no priests of their own, since by 1318 they had offered to John of Montecorvino their Church newly built at Khanbalig. There were Latin Christians, too, we may suppose, mostly from Italy; but these had no clergy at Khanbalig before the arrival of John of Montecorvino, and they may not in such circumstances have thought of putting up a Church. There were also the Alani, very numerous, who before their conversion by John of Montecorvino may not have had priests of their own, unorthodox. These Alani must have been Christians before the arrival of John of Montecorvino. Their spiritual position is compared by Bishop Peregrine in the present letter to that of the Armenians.

11. The writer of the Chigi MS. did not know from his other materials in that MS. the name of the Alani, their numbers, and their relations with Monte Corvino. The missionary literature, known to me, which mentions the Alani is limited to Marignolli's account (1342-45), which Ceccarelli could not have known. Add to this the letter of the Alani to the Pope, dated from Khanbalig, July 11, 1336, and the arrival of an embassy of theirs at Avignon in 1338, which on its return journey in 1338 took Marignolli to Khanbalig as papal legate. The

Alans wrote to the Pope: "For a long time we received instruction in the Catholic faith, with wholesome guidance and abundant consolation, from your Legate Friar John, a man of weighty, capable, and holy character. But since his death, eight years ago, we have been without a director, and without spiritual consolation. We heard, indeed, that thou hadst sent another legate, but he hath never yet appeared." (Yule, *Cathay*, II. (1866), 315.) The letter of the Alani says nothing of their numbers in China.

Marignolli writes: "The chief princes of his (the Great Khan's) whole empire, *more than thirty thousand in number*, who are called Alans, and govern the whole Orient, are Christians either in fact or in name, calling themselves the Pope's slaves, and ready to die for the Franks. For so they term us, not indeed from France, but from Frank-land. Their first apostle was Friar John, called De Monte Corvino, who seventy-two years previously, after having been a soldier, judge, and doctor in the service of the Emperor Frederic, had become a Minor Friar, and a most wise and learned one" (*ibid.*, II. (1866), 336). "And when the Emperor saw that nothing would induce me to abide there, he gave me leave to return to the Pope, carrying presents from him, with an allowance for three years' expenses, and with a request that either I or some one else should be sent speedily back with the rank of Cardinal, and with full powers, to be Bishop there; for the office of Bishop is highly venerated by all the Orientals, whether they be Christians or not. He should also be of the Minorite Order, because these are the only priests that they are acquainted with; and they think that the Pope is always of that Order, because Pope Girolamo was so who sent them that legate whom the Tartars and Alans venerate as a saint, *viz.*, Friar John of Monte Corvino of the Order of Minorites, of whom we have already spoken" (*ibid.*, II. (1866), 341). "In the second year after the flood, he (Shem) begat Arfaxat, who in turn begat Elam, from whom the noble race of the Alans in the East is said to have sprung. They form at this day the greatest and noblest nation in the world, the fairest and bravest of men. 'Tis by their aid that the Tartars have won the empire of the east, and without them they have never gained a single important victory. For Chinguis Caam, the first king of the Tartars, had seventy-two of their princes serving under him when he went forth under God's providence to scourge the world. . . . Arfaxat, the son of Shem, at the age of thirty-five begat Sela or Sale, by whom India was peopled and divided into three kingdoms" (*ibid.*, II. (1866), 373).

Ceccarelli could know from Marco Polo that Christian Alans were established in China (before 1293), but not how many they were or that they lived at Khanbalig. (Cf. Yule, *Marco Polo*, 1875, II. 163.)

Peregrine's letter distinguishes rightly the Alans, a tribe of the Caucasus living near the Armenians and the Georgians, from the people of King George, if the latter were Onguts. How did a forger know this distinction? (Cf. Paul Pelliot, *Chrétiens d'Asie Centrale et d'Extrême Orient*, in *T'oung-Pao*, December, 1914, pp. 629-635; 641-643.)

The number of the Nestorians in Cathay and China is given only in *De l'estat... du grant Kaan* (1328-34). They were more than 30,000 and "are passing rich people, but stand in great fear and awe of the Christians." (Yule, *Cathay*, I. (1866), 249.) That supposes there was at least an equally great number of other Christians in China. The text of *De l'estat... du grant Kaan* published by Golubovich (*op. cit.*, 206) from *Nouveau Journal asiatique*, Paris, 1830, t. VI, pp. 68-71, which Yule also used, has "more than twenty thousand" (*plus de vingt milie*) for the number of the Nestorians. Either Golubovich or Yule appears therefore to have made a mistake.

The reference to the Alans and its description of them in Peregrine's letter appears to me to be the most palpable proof of the genuineness of the letter.

There is something curious regarding the numbers of the Nestorians and the numbers of the non-Nestorian Christians. The Nestorians were more than 30,000, or more than 20,000, as we have just seen two paragraphs above, and they were in great fear of the "Christians." The Alans were more than 30,000, according to de' Marignolli, or 20,000, according to the present letter of Peregrine. Add to them the Armenians and the Latins, and perhaps greater wealth, influence, or bravery on the part of the Alans, to understand why about 1330 the Nestorians stood in awe of the other Christians.

12. Moule places two dots after *Nec videmus* (Nor do we see). There is a break in the meaning, indicating probably the omission of a passage.

13. We cannot say who are these persons, Christians, to whom the Missionaries could preach and administer the Sacraments. Besides the Armenians, and the Alans, there were the Latins, among whom were Europeans, mostly merchants, both Genoese and Venetians. (Cf. Yule, *Cathay*, I. (1866), cxxxiii sq.)

14. The infidels, distinguished here from the idolaters, appear to be the Jews, and in particular, as we see from the very sentence, the Muhammadans. The toleration of Christian preachings in China mosques is surprising, but perhaps not incredible. The Franciscans may have had in this matter the support of the Khan himself, as they had for their preaching in the temples of the idolaters.

The statement about the mosques is unexampled in the other contemporary literature emanating from the Franciscans in China. Bishop Andrew of Perugia (1326) says that, though the Friars could preach freely, none of the Jews or Saracens was

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15. The idolaters, worshippers of images, must be the bulk of the Chinese population: Taoists, Confucianists, Buddhists. The reference to two interpreters, used systematically in preaching to the idolaters, supposes that the words of the missionaries were translated twice before reaching the idolaters. In the case of missionaries who had not learnt Turkish or Persian, which was perhaps the case of Peregrine, we may think that their Italian or Latin was first translated into the Tartar tongue, the usual language, which Monte Corvino says he had learnt; next, the Tartar translation would be interpreted into Chinese. A forger in Italy, writing in the 16th century, could not well have thought of such a method, which, with the confusion of languages then prevailing in China, will appear natural.

Pictures of the Old and the New Testament exhibited by Monte Corvino in his church of Khanbalig in 1306 had legends in Persian, Tarsic, and Latin, so that all nations might read (Chigi MS., *JRAS.*, 1921, p. 91). The Paris MS. has 'Tursic' instead of 'Tarsic.' Wadding has Tarsic (*ibid.*, 91, n. 11). Our Franciscan missionaries were therefore chiefly concerned with or able to reach directly only the Christians who were foreigners in China. Monte Corvino's pictures had no Chinese inscriptions. Tarsic was either Syriac or, rather, a modified Syrian alphabet, Uigur, used by the Christians in Tartary (Yule, *Cathay*, I. (1866), 205n; Pelliot, in *T'oung-Pao*, 1914, p. 636). We have still in China Christian inscriptions in Syriac characters. The Singan-fu stèle (781) is in Chinese characters, with some names of priests added in Syriac characters. There are Syriac characters round a cross in a Temple of the Cross about 100 lis north of Peking.

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20. Instead of "the Archbishops" (*Archiepiscopi*) at Khanbalig, we must evidently read: the Archbishop, *i.e.*, John of Monte Corvino.

21. Possibly, Bishop Andrew of Perugia was still at Khanbalig on December 30, 1318, since he calculates himself that he had been about (*fere*: nearly?) 4 years at Zayton when Bishop Peregrine died there on July, 7, 1322. (*JRAS.*, 1921, p. 103.)

22. Pope Clement V appointed other Franciscan Bishops as suffragans to Monte Corvino. Peter of Florence was created a Bishop on December 20, 1310; for Jerome of Cathalaunia and Thomas, Bulls were issued on February 19, 1311 (*op. cit.*, 222). It is not known what became of Thomas; Jerome does not appear to have reached China. We know from other sources that Peter of Florence was a Bishop in China. It would be very remarkable if a forger had known all this and had placed in China, at a time which is likely, the only other Bishop of the time who is known to have been in China. The other materials in the Chigi MS. are silent on Bishop Peter of Florence.

De l'estat... du grant Kaan says: "He (John of Monte Corvino) made also two other (houses) in the city of Zaiton, which is distant from Cambalech a three months' journey, and standeth upon the seashore. In those two houses were two Minor Friars as Bishops. The one was by name Friar Andrew of Perugia, and the other was by name Friar Peter of Florence. (Yule, *Cathay*, I. (1866), 2472-48.) This treatise was written shortly after the death of Monte Corvino, who, according to the letter of the Alans of 1336, died in 1328. It describes Monte Corvino as recently deceased, yet not so recently, it would seem, since it says of the Tartars and the Christians: "And they *still* (*encore*) visit the place of his interment with great devotion" (*ibid.*, I. 248). It professes to have been written in the lifetime of Pope John III, who reigned from September 5, 1316, to December 4, 1334. The author, a Bishop of Soltaniah, appears to have been John of Cora, a Dominican, the successor of William Adam, another Dominican, Bishop of Soltaniah from 1323 to 1329. We cannot gather from it that the author had been in China. He might have compiled his account by means of the letters which had reached Soltaniah from China *via* Tauris. His treatise seems to describe as dead both Andrew of Perugia and Peter of Florence.

We know that before Peregrine's death on July 7, 1322, Andrew of Perugia was 5 years at Khanbalig, and at Zayton about 4 years, that he succeeded to the see of Zayton "not long after" Peregrine's death and was alive in January 1326, being then old, and, as he says, the only living suffragan bishop created by Pope Clement, by which he might mean the only one of the seven created in 1307. Between 1326 and the date of *De l'estat... du grant Kaan* we must place his death, the succession of

Peter of Florence as fourth Bishop of Zayton, and possibly also the latter's death. Fr. Pou y Marti (*op. cit.*, 221, col. 2) states that Andrew of Perugia sat on the see of Zayton from 1326 to 1328, when he died. The date 1326 appears to be too late, and I cannot say on what the date 1328 is based. When Monte Corvino died in 1328, he may have left instructions for the nomination of Andrew of Perugia's successor to the see of Zayton.

Peregrine's letter represents the two bishops Andrew and Peter of Florence as living at Khanbalig with the Archbishop, John of Monte Corvino. The simultaneous presence of so many Bishops at Khanbalig cannot be urged as an objection. It was peculiar to the conditions of the time. At one time, there may have been as many as three suffragans living at Khanbalig with Monte Corvino: Andrew, Gerard, and Peregrine. We know of only one suffragan see created by Monte Corvino, that of Zayton; yet at one time, he seems to have had simultaneously in China four suffragans: Andrew, Peregrine, Gerard, and Peter of Florence. In 1307 the Pope appointed as many as seven suffragans and 3 more before the end of 1311. During part of the time when they were at Khanbalig, Andrew of Perugia and Peter of Florence may have resided separately in the two churches erected before 1307. Monte Corvino himself went to reside at the church of the Armenians, says Peregrine's letter. For a time, Andrew of Perugia and Peregrine, two Bishops, lived together at Zayton, where before 1319 there was only one church. A second church, contemplated in 1318, was built before 1326. It existed when Odoric passed through Zayton, *i.e.*, in 1325 apparently.

23. '*Cayffensis*' must be a mistake for Caytensis. Peregrine's letter writes the name of the town twice in the form Cayton and once in the form Zayton. In Andrew of Perugia's letter we have once Cayton and twice Zayton (Chigi MS.); thrice Cayton in the Paris MS. and thrice Cayton in Wadding. (Cf. *JRAS.*, 1921, pp. 103-105.)

Golubovich identifies Zayton with Teeu-Tung or Tsiuan Teeu, opposite the island of Formosa. (Cf. *Onomasticon geografico illustrativo*.... in *Bibl. Bio-Bibliografica*, t. 2, p. 573 and map.) Moule writes (*JRAS.*, 1914, p. 565, n. 2): "The identity of Zaitum is much disputed, but the weight of evidence appears to be in favour of it being Ch'üan-chou in Fukien. Among other evidence which has been neglected is the discovery at or near Ch'üan-chou in 1619 and 1638 of three stones carved with crosses." See, however, L. Gaillard, S.J., *Croix et swastika en Chine*, 1904, pp. 147, n. 3, 149, n. 1, 151-153; for the three crosses found in 1619, 1637, and 1638, see *ibid.*, pp. 152-153; for the tomb of Bernard, Odoric's companion (?), and the tombstone of a Bishop erected in 1387, see *ibid.*, p. 149.

Marignolli, who was at Khanbalig about 3 years (1342-45) says of Khanbalig: "The Minor Friars have a cathedral church immediately adjoining the palace, with a proper residence for the Archbishop, and other churches in the city besides, and they have bells too, and all the clergy have their subsistence from the Emperor's table in the most honourable manner" (Yule, *Cathay*, II. (1866), 341). Of Zayton he writes: "There is Zayton also, a wondrous fine seaport and a city of incredible size, where our Minor Friars have three very fine churches, passing rich and elegant, and they have a bath also and a *fonduco* which serves as a *dépôt* for all the merchants. They have also some fine bells of the best quality, two of which were made to my order, and set up with all due (*p.* 356) form in the very middle of the Saracen community. One of these we ordered to be called Johannina, and the other Antonina" (*ibid.*, II. 355-356). According to Andrew of Perugia the hermitage outside the city near a wood was the finest the Province had anywhere.

24. A forger had no interest in inventing these names, or in stating that Brother Ventura of Sarezana had joined the Order in China. I take *in istis partibus* to mean "in these parts", *i.e.*, in China. The word *iste* is used elsewhere in the letter in the sense of *this*. I have on purpose indicated in my translation the use of the word *iste* wherever it occurs. Ventura de Sarezana may have been one of the Genoese merchants whose presence at Zayton the letter of Andrew of Perugia (1326) reveals. The only place like Sarezana in Johnston's *Royal Atlas*, 1901, is Saracena, in Calabria. Bishop Peregrine would naturally think it worth while to say that one of his three companions had joined the Order in China. The paucity of the Missionaries and their success would have been a sufficient incentive for one of the Latin merchants to throw in his lot with them. A forger would have avoided the family names of the Friars and the places of their origin, as a search in the archives of the Order or in the baptism registers exposed him to discovery.

25. This Armenian lady is mentioned also in Andrew of Perugia's letter (January, 1326): "There is a certain great city near the Ocean Sea which is called in the Persian tongue Zaitum, in which a wealthy Armenian lady built a large and sufficiently beautiful church, which indeed, after it had been made a cathedral by the Archbishop, she gave of her own free will while she was living and left at her death, with adequate endowment, to Brother Gerard the Bishop and our Brothers who were with him. And he was the first to occupy that See." (*JRAS.*, 1914, *p.* 594.)

26. The property outside the city of Zayton was perhaps part of the endowment left by the Armenian lady. Bishop Andrew of Perugia writes: "And in a certain grove at a quarter of a mile from the city I caused a convenient and beautiful church to be built with all the offices sufficient for twenty Brothers, and with

four chambers of which any one would be good enough for any Prelate. And in this place, indeed, I stay continually and live upon the royal charity which I have mentioned, which may amount, according to the reckoning of the Genoese merchants, to the annual value of a hundred golden florins or thereabout. And of this charity I have spent a great part in the building of the aforesaid place (*p.* 595) the like of which I do not know in the whole of our province for beauty and every convenience." (*JRAS.*, 1914, pp. 594-595.)

The word translated by 'office' is *officina*, a word also used by Monte Corvino in his letter of February 13, 1306, in connection with his new convent at Khanbalig. (*JRAS.*, 1921, p. 92.)

27. In his article on China in the *Catholic Encyclopedia*, New York, III. 670, Henri Cordier, who makes Bishops Andrew, Gerard, and Peregrine reach China in 1308, gives 1313 for the date of Gerard's death. The literature at my disposal is not so precise for that date and several others. Andrew of Perugia could hardly have said that Peregrine, who died on July 7, 1322, had ruled *paucis annis* (not many years ago), if he had been Bishop of Zayton since 1313. All we can say, it seems to me, is that Gerard had died some time before Peregrine's letter of December 30, 1318. Peregrine does not even say that Gerard had been his predecessor in the see of Zayton. He supposes this known. It was left to Andrew of Perugia to give the order of succession of the first three Bishops of Zayton: Gerard (Albuini), Peregrine (died July 7, 1322), Andrew of Perugia, who succeeded Peregrine "not long after".

28. "Our Latins". The expression is unexampled in the Chigi MS., but is in the style of the time. Agreeing with it, we have in Peregrine's letter (Chigi MS.) a reference to the church of the Latins at Khanbalig, which we now see can mean the church frequented by the Latin merchants. Monte Corvino says of the church built by King George, that it was called the Roman church, an appropriate name for a place far inland where there would be no Latin merchants. Friar Jordanus of Severac speaks of "our Latin merchants" in India (Yule, *Cathay*, I. (1866), 227), of the "fame of us Latins" in India (*ibid.*, I. 230), of "we Latins", extolled by the Indians as their only hope. (Yule, *Mirabilia descripta*, 1863, p. 23.)

29. Compare with Andrew of Perugia's letter in the Chigi MS. "In the abovesaid city of Zayton, which is about a three months' journey from Cambalech" (*JRAS.*, 1921, p. 103). The corresponding passage in the Paris MS. is "of about three months". Wadding replaced 'months' by 'weeks' (cf., *ibid.*), to Yule's astonishment (*Cathay*, I. (1866), 223 n. 3). *De l'estat... du grant Kaan* agrees with Peregrine's letter: "Zaiton, which is distant from Cambalech a three months' journey and standeth upon the seashore" (*ibid.*, I. 247), where we note that the adverb

about of Andrew of Perugia's letter is missing, as in Peregrine's letter.

All considered, I discover in Peregrine's letter no cause for suspicion, but every reason in favour of its authenticity.

Chelis, Chincheos (Chorii, Tochari), and Chinese in India,
according to Manoel Godinho
de Eredia (1613).

By THE REV. H. HOSTEN, S.J.

SOME passages in Manoel Godinho de Eredia (Cf. Léon Janssen, *Malaca, l'Inde Méridionale et le Cathay*, Bruxelles, C. Muquardt, 1882) strike me as worth considering.

I. I need not say much of his statement that the Chelis were settled from early times at Malaca and traded in spices with Coromandel and Egypt (fol. 22v). He places in 1411 the foundation of Malaca, but also the first settling there of the Muhammadans (fols. 4r, 22v, 23v, 38v). The Chinese Annals place it between 1409 and 1416. (*Hobson-Jobson*, s.v. Malaca.) Was not Malaca much older, under another name? At any rate were not the Chelis settled in those parts from the first century of the Christian era? We know that a strong tide of immigration from South India to Java and the neighbourhood existed in the first centuries of the Christian era. That being so, some of the Indians settled at Alexandria in the first century of our era may have been the brothers of the Indians settled at or near Malaca, and their correspondents in the spice trade and in the trade of many other Eastern commodities.

The Chelis are the Telugus of the Coromandel Coast. Yule (*Hobson-Jobson*, 1st edn., s.v. Cheling, Cheli) suggests that the name possibly originated in some confusion between Quelin and Chetin (Chetty), or less probably between Quelin and Chuli (Choolia). Neither explanation satisfies me.

Not the former. Quelin or Kling (Kāling, in the Malay countries) derives from Kalinga, the Telugu, Telinga, Tilanga coast of the Bay of Bengal. (Cf. *Hobson-Jobson*, s.v. Kling, Telinga.) Chetty is derived by some from *s'reshtha* (Skt.), 'best', 'chief', or *s'reshhi*, "the chief of a corporation, a merchant or banker." (Cf. *Hobson-Jobson*, s.v. chetty, sett.) C. P. Brown denied this, saying: "Shetti, a shop-keeper, is plain Telugu" (*ibid.*, s.v. chetty). Be that as it may, the Portuguese at Malaca, where the Chetties were ~~from~~ the Coromandel Coast, distinguished the Quelins and the Chetties. In the Commentaries of d'Albuquerque, (Hakl. Soc., III. 128), Afonso d'Albuquerque appoints (A.D. 1511) a Hindu Governor over the Quilins and Chetims. (*Hobson-Jobson*, s.v. chetty). See also d'Albuquerque's Commentaries (Hakl. Soc., III. 146) quoted *ibid.*, s.v. Kling, and his *Cartas*, I. 163, quoted

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Chincheos? If we say that, as he writes at times Attay for Cathay, he connected the Attacores, from whom sprung the Tochari, with the Chincheos, we have advanced but little. Did he place the Chincheos among the peoples of Cathay? Besides, this explanation does not satisfy us for his identifying the Chincheos with the Chorii. He could not have meant only that in the word Attacores or Attacori is found the name Attay (Cathay), Tochari and Chorii. This would have been at best mere speculation with regard to the name Attacori, and would have left him nowhere to bring us to the Chincheos. Did then a study of the physical features of the Chincheos or of their traditions guide him? He found the Chincheos represented at Malaca and could study them there.

"The Arabs at an early date of Islam, if not before, had established a factory at Canton, and their numbers at that port were so great by the middle of the eighth century that in 758 they were strong enough to attack and pillage the city, to which they set fire and fled to their ships. Nor were they confined to this port. The city now called Hangecheufu, the Quinsai and Khansa of the middle ages, but known in those days to the Arabs as Khanfu, was probably already frequented by them; for one hundred and twenty years later, the number of foreign settlers, Musulman, Jew, Christian, and Gueber, who perished in the capture of that city by a rebel army, is estimated at one hundred and twenty thousand, and even two hundred thousand." (Yule, *Cathay*, 1866, I. lxxx.)

Shall we say that many other such foreigners had been settled in Chinchew in Fukhien, and that Godinho de Eredia picked up from their descendants at Malaca traditions which connected them with the Chorii and Tochari? Have we any clue in the intermarriages of Armenians and Chinese in Armenia in the first centuries of our era? (Yule, *Cathay*, I. (1866), lxxxiii.)

Who were the Ghur or Gores of the Lequeos or Loo-Choo Islands (near Formosa), white men, of whom Duarte Barbosa speaks before 1516? (Cf. Dames, *The Book of Duarte Barbosa*, II. 215, n. 1, 216, n.) West of Kabul, there is a district called Ghūr, inhabited by the Nukdari or Nigūdari, some of whom, said Emperor Babar, spoke the Mogol language. (Yule, *Marco Polo*, I. (1875), 104.) Must we seek a connection between the Gores of Barbosa and the Chincheo Chorii of Godinho de Eredia?

Some of the Chincheos met by Godinho may have been Christians: for he relates a very wonderful story: that, when the capital of Campion was transferred to Jendu (Tenduc), the Christianity of St. Thomas was founded about the year 69, and that vestiges of this Christianity were found in a shoe or slippers, which the natives "held" in great veneration. (Léon Janssen, *op. cit.*, fol. 65.) It seems to me that Godinho could

not have learned this from the people of Tenduc, but only from Chincheos once Christian.

What led ancient writers to people the three Indias with Semites, as does de' Marignolli, who was several years in China before 1348? "Shem was anxious to maintain the worship of the true God, and his history we shall now follow. In the second year after the flood he begat Arfaxat, who in turn begat Elam, from whom the whole noble race of the Alans in the East is said to have sprung. They form at this date the greatest and noblest nation in the world, the fairest and bravest of men. 'Tis by their aid that the Tartars have won the empire of the east, and without them they have never gained a single important victory. For Chinguis Caam, the first king of the Tartars, had seventy-two of their princes serving under him when he went forth under God's providence to scourge the world... Arfaxat, the son of Shem, at the age of thirty-five, begat Sela or Sale, by whom India was peopled and divided into three kingdoms." One of these kingdoms in de' Marignolli's estimation was *India Maxima*, i.e., Canton and its neighbouring provinces. (Yule, *Cathay*, II. (1886), 373.) And de' Marignolli was not the first to write in this sense. He was preceded by one of the early Fathers, whose text I once met in Migne's collection, but the reference to which I am not now able to give, nor do I think that de' Marignolli depended on it. de' Marignolli seems to have given us the theories of the Alans themselves, and these Alans, in their original habitat, were the near neighbours of the Armenians and the Georgians, the latter of whom, not to mention their settlements in India, where they were known as Gurz or Guzr, seem to have overrun the East quite as much as the Alani. As for the Alani, Godinho notes with surprise that they were the same who had overrun Spain before the Goths.

3. Godinho de Eredia settles Chinese colonies at Chilão (Chilaw, Ceylon), Chimdy or Sindi (Sind), and Cochim (fol. 23v); also, at Tatâ, or Cattâ (on the Indus), "because it is of Catta or Atay" (Cathay). He explains Cochim or Cosim as meaning: "a place of China, as is well known by the imperial stone of coronation of the Malavar Empire, which is in the power of that sâtrap who was appointed and placed by the Emperor of Attay" (Cathay). Of Simlão or Chimlão (in Ceylon) he adds: "not very far from it is the pagode of the tombs of those kings of Ceylão." (fol. 27.)

I begin by remarking that in a MS. description of Indostan and Guzarate, which I have prepared for publication, Godinho de Eredia writes Sim for China.

I cannot say how Godinho concluded that Cattâ and Tatâ are synonymous. On the other hand, it is not likely that a mere similarity of sound between *Chimdy*, *Sindi*, and *Sim* (China) made him conclude to an ancient colony of Chinese or

Cathayers in Sind, and in particular at Tata, and that he was thus led to change the name of Tatâ to Cattâ. The same for the similarity of sound between *Sim* and *Simlão*, *Chimlão* (Chilaw), *Cochim* and *Cosim*. What is more likely is that in the course of his enquiries Godinho found there had been Chinese settlers in Sind, notably at Tata, also at Cochín, and Chilaw, and that he sought a confirmation for this in the very names.

Chinese influence was "a matter of recent memory at the arrival of the Portuguese . . . and they found many traces of it remaining." (Yule, *Cathay*, I. (1866), lxxiv.)

The question is where in India the Chinese were established. We naturally think of the great ancient ports.

(a) *Tata* would be one. I do not find any special evidence for Tata, beyond the statement of Godinh; but as one of the two Tiyu, visited by the Chinese *circa* 700, is Diul, west of the Indus mouths and not very far from Karachi, as Yule thought, they would naturally have been led to visit Tata. They still visited Debal (Diul) c. 1150. (*Hobson-Jobson*, s.v. Diul-Sind.) They visited Baroch, Suhar in Oman, the mouths of the Euphrates (Yule, *Cathay*, I. (1866), pp. lxxviii-lxxix and lxxix, n. 1.); also, another Tiyu, probably Diu (*ibid.*, I. lxxviii, and *Hobson-Jobson*, s.v. Diu); also apparently Dwara (Samudra), and Somnath (Yule, *Cathay*, I. lxxvii).

Another place on the West Coast of India was Çaimur. Kazwini is quoted by Gildemeister as saying in 1274: "Çaimur, a town of India near Sindia (=Sind), whose inhabitants are noted for perfect beauty, being descended from Indians and Turks. There are Muslims, Christians, Jews, and Magi. In the town there are Muhammedic temples, churches, synagogues; there is also a temple of fire-worshippers." (Gildemeister, *Scriptores Arabum de rebus indicis*, Bonnæ, 1838, p. 208; quoted through W. Germann, *Die Kirche der Thomaschristen*, 1877, p. 197). Ibn Muhalhal (c. A.D. 941) writes, however: "Saimur, whose inhabitants are of great beauty, and said to be descended from Turks and Chinese." (Yule, *Cathay*, I. (1866), p. xcii with n. 2, and p. cxi.)

(b) *Cochin* is regarded as a relatively modern town. It would have owed its position as a harbour to a great inundation which in the 14th century broke through the lagoon near it and made it join the sea. The Chinese architecture of many buildings in Malabar is a proof of former Chinese influence. New to me is the connection established by Godinho between the sacring-stone of the Kings of Cochín and the Emperor of China. Other Portuguese historians, do Couto, in particular, I think, connect that stone with the great Chera Perumal and state that there were wars between Cochín and Calicut for its possession. In 1600 it was in the possession of Cochín. It ought to be still in the possession of Cochín, for aught I

know. Did Godinho, who had retired to Goa by 1611-13, ever see that stone or get it described to him by one who had seen it? By what marks or traditions could it be associated with the Emperor of Cathay? That stone was formerly in an island between Cranganore and Calicut; by 1600 it had been removed to Cochin, where it was jealously kept. Had Godinho heard among the Syrians of Malabar that Gondophares, to whom came St. Thomas, had reigned at Khanbaligh (Peking) or in Cathay? Such was the opinion of a Syrian Bishop in Malabar about 1533. The King of Cranganore in St. Thomas' time became a Christian. He went in search of St. Thomas to the Kingdom of Gondophares and there became a deacon. Did the Syrians ever regard him as a vassal of Gondophares living in China?

Yule notes that possibly the Malays called *Kuchi* (Cochinchina) by the name *Kuchi-China*, to distinguish it from Kuchi of India (Cochin). Cf. *Hobson-Jobson* s.v. Cochin-China; but Godinho de Eredia (Léon Janssen, *op. cit.*, p. 76) gives to Coc Sim or Cochinchina the name of Greater China (Minor China, at fol. 64v, according to my notes), a dependency from Mansim, though it appeared to Godinho to depend on the Sim discovered by him in 1611.

Near Cochin lies Tiruvanchikkulam and its ancient temple. From the ending *chikkulam* some derive the ancient name of Shinkali, practically synonymous with Cranganore in the 14th century. de' Marignolli explains it as Little India, or rather as Little China, as Yule remarks he should have explained it. "And in the second India, which is called Mynibar (=Malabar), there is Cynkali, which signifieth Little India, for *kali* is 'little'." (*Hobson-Jobson*, s.v. Shinkali and referring to Yule's *Cathay*, II. (1866), p. 373). In fact, de' Marignolli opposes Cynkali (Little China) to Chin Kalan, the Persian translation of Mahachina (Great China), i.e. Canton, or de' Marignolli's India Magna.

Yule has the following quotation under Quilon:—

c. 1280-90. "Royaumes de Ma-pa-rh. Parmi tous les royaumes étrangers d'au-delà des mers, il n'y eut que Ma-pa-rh et *Kiu-lan* (=Mabar and *Quilon*) sur lesquels on ait pu parvenir à établir une certaine sujétion; mais surtout *Kiu-lan*." (Année 1282). "Cette année... *Kiu-lan* a envoyé un ambassadeur à la cour (mongole) pour présenter en tribut des marchandises précieuses et un singe noir." (*Chinese Annals*, quoted by Pauthier, *Marc Pol*, II. 603, 643; quoted in *Hobson-Jobson*, s.v. Quilon.)

Mabar was the Coromandel Coast, with Mylapore as one of its chief ports. de' Marignolli (1348) speaks of Tartars visiting in pilgrimage the tomb of St. Thomas at Mylapore, and Yule already suspected that these Tartars came from China. "I have already suggested that Marignolli's mention of 'Tartars'

(p. 376 *infra*) may indicate that Chinese traded, perhaps were settled, also on the Coromandel Coast." (Yule, *Cathay*, I. (1866), p. lxxvi.) Chinese were still coming to Mylapore on pilgrimage or on trade about 1501, and one of the legends about St. Thomas at Mylapore was that, when the Chinese came to Mylapore and wanted to cut off the hand of St. Thomas which could not be buried, and take it to their own country, it withdrew into the tomb.

Yule says that Ritter's idea that Chinapatam, one of the native names of Madras, is a trace of ancient Chinese colonisation there, is not well founded. He prefers the derivation of Chinapatam from Chennapatam or Chennapapatam, the site having been granted to the British in 1639 by the Naik of Chingleput, and the name Chinapatam having been bestowed on it in honour of that chief's own father-in-law, Chennapa by name. (*Cathay*, I. p. lxxvi.) On the other hand, he states that Burnell did not admit that the actual name of Chinapatam could have been formed from that of Chenappa, and he expresses his surprise that de Barros should have connected the Chinese with San Thomé, of Mylapore. (*Hobson-Jobson*, s.v. Chinapatam). He also expresses his astonishment at the fact that Gasparo Balbi about 1582 should have attributed to Chinese mariners certain pagodas seen in making Negapatam after rounding Ceylon, calling them the *Sette Pagodi de' Chini*, (the Seven Pagodas of the Chins, Chinese). Did Balbi not confuse the Seven Pagodas of Mahabalipuram with the ancient tower near Negapatam, of which Yule gives a sketch in his *Marco Polo*? It was supposed to be a Chinese tower, and may have been a Chinese lighthouse. Before the Portuguese, a beacon was lit at night on St. Thomas Mount, Mylapore, the *Monte Grande* of the Portuguese. Masudi mentions that at the entrance of the roadstead near Obollhah and Abadan, off the mouth of the Euphrates, there were three great platforms on which beacons were lighted every night to guide ships coming in. (Yule, *Cathay*, I. (1866), p. lxxix, n. 3.)

(c) Chilaw, is a place "on the west coast of Ceylon, an old seat of the pearl-fishery. The name is a corruption of the Tamil *salābham*, 'the diving'; in Singhalese it is *Halavatta*. The name was commonly applied by the Portuguese to the whole aggregation of shoals (*Baixos de Chilão*) in the Gulf of Manaar, between Ceylon and the coast of Madura and Tinnevely." Teixeira (1610) explains *Chilão* as meaning in Simhalese the 'fishery'. (*Hobson-Jobson*, s.v. Chilaw.) Godinho may be very wrong if he thought, as possibly he did, of deriving Simlão or Chimlão from Sim (China). He may be right in making it a settlement of Chinese, in which case the Chinese would have had an interest in the pearl-fishery. For the relations between the Chinese and Ceylon, it will suffice to refer to Yule (*Cathay*, I. (1866), pp. lxxvii-lxxiv). By what

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right does Godinho state that not far from Chilão was a pagoda where the ancient Kings of Ceylon were buried? Is there any ground or tradition for such a belief? And could these kings have been indigenous, or were they Chinese notables established in the island to exact the tribute to China? In the 15th century, there appears, says Yule, to have been a Chinese resident in Ceylon who superintended the administration. (*Cathay*, I. (1866), p. lxxiv.)

It appears to have been a common error of the Portuguese to derive the name of the Sinhalese from China. Godinho would have been preceded in this matter by de Barros. Godinho's contemporary, do Couto, wrote like de Barros. "They must have been influenced," says Yule (*Hobson-Jobson*, s.v. Singalese), "by the curious and obscure fact of the introduction of Chinese influence in Ceylon during the 15th century. He adduces (*ibid.*) the two following passages.

1552. "That the Chinese (*Chijs*) were the masters of the Choromandel Coast, of part of Malabar, and of this Island of Ceylon, we have not only the assertion of the natives of the latter, but also evidence in the buildings, names, and language that they left in it . . . and because they were in the vicinity of this Cape Galle; the other people who lived from the middle of the Island upwards called those dwelling about there Chingalla, and their language the same, as much as to say the language, or the people of the Chins of Galle." (Barros, III. ii. i.)

1612. Couto, after giving the same explanation of the word (Singalese) as Barros, says: "And as they spring from the Chins, who are the falsest heathen of the East, . . . so are all they of this island the weakest, falsest, and most tricky people in all India, insomuch that, to this day, you never find faith or truth in a Chingalla." V. i. 5.

(d) For a time the Chinese were also established in Ava and Pegu, notably in the 13th century. do Couto has a passage on the Chinese formerly in Pegu. The *Ayeen* (edn. 1800, II. 4) says (c. 1590): "Near to this is Pegu, which former writers called Cheen, accounting it to be the capital city". (*Hobson-Jobson*, s.v. China.) Conti calls Ava Macin (*ibid.*, s.v. Macheen).

Finally let us note that in a list of countries, containing the names of China and Mahachina, we find Chinavalli, which appears to have been in India (*ibid.*, s.v. China, quoting a MS. note by Burnell, taken from the *Somesvaradiva*, Bk. III. ch. 6).

Though the Indians designated the parts of Canton under the name of Mahachina, it remains a puzzle why these same parts were designated from early times till the Middle Ages by the name India Maxima, India Tertia, India extra Gangem, etc. Inversely, the Chinese seem to have designated parts of India in terms of China.

We have the fact that they designated as Ta-thsin (Great

China) Mesopotamia, and Syria. "The name Ta-tshin (Great China,) we are told, was applied to those western lands on account of some analogy of its people to those of the middle kingdom. Some even alleged that they had sprung originally from China. But this was probably a puerile perversion, and we may suppose that the name was given from some perception that those Greek and Roman countries bore to the west the same relation that China and its civilisation bore to Eastern Asia." (Yule, *Cathay*, I. (1866), lvi.) Yule's explanation appears too subtle to be correct.

Then there is de' Marignolli speaking of Cranganore in the second India as Little China, in opposition to Great China, Chin Kalan, Canton.

The Chinese (c. 650) recognised five Indies. They called India, at least the India of Sind, by the name of T'ien-chu (*Hobson-Jobson*, s.v. India). Now, Tsen, a Chinese State existing several centuries before Christ (and pronounced Tien in Mandarin), appears to have led to *Chin*, *Sin*, *Sinae*, *Thinae* (*ibid.*, s.v. China). Did it also produce T'ien-chu (India)? Possibly, I speak here as one less wise.

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N.B.—*Hobson-Jobson*, s.v. Sind, has the following passage:—

770. "Per idem tempus quingenti circiter ex Mauris, *Sindis*, et Chazaris servi in urbe Haran rebellarunt, et facto agmine regium thesaurum diripere tentarunt". (*Dionysii Patriarchae Chronicon*, in *Assemani*, ii. 114.) But from the association with the Khazars, and in a passage on the preceding page with Alans and Khazars, we may be almost certain that these *Sindi* are not Indian, but a Sarmatic people mentioned by Ammianus (xxii. 8), Valerius Flaccus (vi. 86), and other writers."—Thus far *Hobson-Jobson*.

In Butler's *Atlas of Antient Geography*, 1877, map 24, showing the world as known to Herodotus, we find *Sindica* near the Black Sea, where we should place also the Khazars.

(Azi) Dahāka in History and Legend

By SIR J. C. COYAJEE

The Legend of Dahaka

History and Mythology have combined to give Dahaka a place of unusual prominence in the memory of mankind. Even as a historical personage he made his mark on the annals of Assyria, the history of Media and on Greek accounts of Eastern History. But had he been celebrated only in history—as the ancestor of the royal line of Media—he would have been far less famous than now, and he would have been necessarily overshadowed by the founders of later royal houses which ruled over larger empires. He owes his sombre and tragic greatness to the fact that mythology surrounded him with a lurid and terrible halo. In appropriating him mythology exposed him to the execration of ages—very likely undeservedly. But at the same time it gave him a terrible grandeur all his own. As will be shown he unites in himself the dragon legends of the East and of the West; for, as we shall show, he is identified with or bears the distinguishing features of the dragons Azi of the Avesta, Tiamat of Babylonia and the Gorgons of the West. He is one of the central figures of the Apocalyptic literatures of Persia and of ancient Armenia. Both from the point of view of mythology and of history the East and the West meet in him.

The main problems relating to the legend of Dahaka might be thus stated: In the first place we have the accounts of Deioke by Herodotus and of Dahaka in Persian chronicles, and it can be shown that the points of agreement between them are more numerous than has been supposed. In the second place some account has to be given of the position of Dahaka as a point of union or junction of the dragon or snake legends of the East and the West. The third problem appears to be the most difficult—how did it happen that the ancestor of the royal house of Media became the centre of these cycles of dragon legends?

There is a fairly general consensus of opinions among historians as regards the identification of the Median King Deioke described by Herodotus with the Median prince Dayaukku of the cuneiform texts (Huart, *Ancient Persia*, p. 30, Maspero, *Passing of the Empires*, 376). Thus Eduard Meyer, Maspero and Justi, among others, argue for the identity of the two on the ground that the time which Herodotus assigns to

Deiokes of the Medes is the same as that in which Sargon in his inscriptions speaks of having deported Daiaukku ("the lieutenant of Man" or "the Mannean Governor" (Luckenbill, *Ancient Records of Assyria*, 11, 12 and 56). Those who question the identity of Deiokes and Dayaukku are faced by the difficulty of conceiving two important personalities of the same name working in the same political field in the same decade, and of accounting for the total silence of the inscriptions regarding one of them. The first mention of Dayaukku by Sargon was in 715 B.C. Later, again in 713 B.C. Sargon speaks of his district as Bit Daiaukki—"the house of Dewkis" (Luckenbill, 11, 23). This coincidence of time and it might be added of exploit has established in the opinion of eminent historians the identity of Deiokes (of Herodotus) and Dayaukku of the inscriptions. In Sargon's inscriptions we find the Iranian tribes of North-Western Iran divided politically. We read of princes like Iranzu ruling over the Mannai who were very loyal to Assyria (Goodspeed, *History of Babylonians and Assyrians*, p. 251) while there were other princes who acted at the instigation of the ruler of Urartu which was the rival of Assyria. We also find the Medes pressing west and absorbing the tribes there. But shortly after we find all this political and tribal confusion disappearing; and while part of this political consolidation is no doubt due to the efforts of Assyrian Kings to build up a buffer kingdom against Urartu, (Goodspeed, *op. cit.*, p. 251) yet much of the merit is due very probably to Dayaukku whose work was as Maspero says "to create a central rallying point for the Median tribes around which they henceforth grouped themselves". Such a consolidation was no doubt the work of a great political personality, and it was the more creditable to Deiokes since, according to the Sargon inscriptions, he began his career as a petty prince of the Mannai. It is also very probable that he avowedly appealed to the Median and Mannai tribes in the cause of political unity, since the very name of his capital Eebutana (Hangmatana) refers to the idea of political unity, and has been translated as "the meeting place of the tribes" (cf. Rawlinson, *Five Great Monarchies*, Vol. I, p. 103, Maspero, *Passing of Empires*, p. 325). It is true that he began his career by conspiring against local rulers like Ullusunu, but he seems to have ended by uniting the tribes and bringing about a national cohesion (cf. *Cambridge Ancient Hist.*, III, 51-52). He ruled long enough to give the Medians the unaccustomed luxury of half a century of comparative peace, and there were in his days none of those disastrous wars either with Assyria or with the Scythians of which both his predecessors and his successors had their full share. Tradition has done him justice in this respect, for in the Dinkard (Book IX, Chap. 21, ss. 18) the people of Northern Persia are said to have addressed Feridun thus:

"why did'st thou smite Azi-Dahak, who was a good ruler as to prerogative, so that danger was kept away by him, and an inquisitor from him protected this region from those of the Mazendaran country?" It is obvious that here, as in some other places, by "those of the Mazendaran country" are meant the Scythians; for as Dr. West has noted Mazendaran was considered to be out of the Khvaniras continent.

It is not difficult again to identify the Dahak of the Persian chronicles with Deiokes the first king of Media. Indeed the correspondence between the account given by Herodotus of Deiokes and the description of the career of Dahak given by Firdausi and others is under the circumstances striking and interesting. To take one example: According to Herodotus, Deiokes was the first king of the Medes and it was he who "collected the Medes into one nation, over which he ruled" (I. 101). Now, Firdausi no doubt begins his Shahnameh with the reigns of legendary kings like Gayumarth and other mythical kings. But in one rather neglected corner of his extensive epic he clearly asserts that kingship began in Persia with Dahaka. When narrating the reign of Khosru Parwiz, Firdausi describes the origin of "the ancient throne" (تخت طاق دیس) of Persia, and there the poet asserts that the origin of that throne was in the age of Dahak:

سرمایهٔ آن ز ضحاک بود که ناپاک بود و نایاب بود

("The beginning of that Throne was made by Dahaka who was impious and wicked"). There is also the significant statement that this old throne was constructed in Mount Damawand which is so closely associated with the fate of Dahak:—

یکی مرد بد درد ماوند کوه که شاهش جدا داشتی از گروه
کجا جهان برزین بدی نام اوی رسیده بهر کشوری کالم اوی
یکی نامور شاه را تخت ساخت گهر بر گهر کرد او بر نشاخت

("There was a man in Mount Damawand whom the king kept apart from others. His name was Jehn Burzin and his success were celebrated in many lands. He constructed a noble throne for the king which was inlaid with great numbers of jewels").

Firdausi also refers to the great fort and palace of Dahaka which is described by Herodotus. It was so lofty and splendid according to the poet that Feridun saw its dazzling splendour from a great distance.

زیک میل کرد افزیدون نگاه یکی کاخ دید اندرون شهر شاه
که ایوانش برترز کیوان نمود تو گفتی ستاره بخواد ربود
بدانست کان خانهٔ ازدها ست که حای بزرگی و جای مهاست

فروزنده چون مشتري بر سپهر همه جاي شادي و آرام و مهر
 طلسميکه سخاک سازیده بود سرش با آسمان بر فرازیده بود

(From the distance of a الوند Feridun beheld a palace in the royal city which was loftier than Saturn; such that you would say, it would seize the stars. Feridun knew it to be the palace of the Dragon and the seat of greatness. It was the abode of joy comfort, and love and it shone like Jupiter in the heavens—that was the talisman which Dahak had made and exalted to the skies). Here Firdausi well represents the feeling of astonishment and terror which must have been excited in the Median and Mannai tribesmen as they looked at the fortress and palace of the new sovereign. But an even more picturesque and short description of it is to be found in the Dinkard where the fort is called “the golden cage which was completely impregnable” (Book IX, Chap. 21, verse 13). This is a very accurate description indeed of the gilded and painted battlements of the fort at Ecbatana (cf. Herodotus, I, 98-99).

The fort and palace of Deiokes stood on a spur of Mt. Orontes and this hilly position no doubt contributed greatly to the strength of the fort. To this Mountain Orontes—called by Persians Arwand or الوند (Alwand) there are references both in the Arabic and Persian chronicles—Thus Alberuni styles Dahak, Baiwarasp son of Arwandasp (Justi, p. 61); while Firdausi represents Arwand as an important stage in the march of his rival Feridun; but by a pardonable mistake believes that the name Arwand referred, not to the Mountain Orontes but to the river of the same name.

با روند رود اندر اورد روی چنان چون بود مرد دبهیم جوی
 اگر پهلواني نداني زبان بتازی تو اوروند را دجله خوان

(“He marched towards the river Arwand as befitted one who sought the crown. If you do not know Pahlavi understand that Arwand means the Tigris”). By a singular coincidence the name Orontes occurs twice in the history of Deiokes. In the first place the great fort and palace which he built as a King stood near Mt. Orontes. But, in the second place, Hamath where Deiokes (Dayaukku) and his family were settled in exile by Sargon was also situated on the river Orontes. Hence the name Arwand (Orontes) mentioned by Firdausi in the episode of Dahak is shown to have a double historical connection with the latter's history.

Generally speaking, the eastern historians merge in their account of Dahak of the reigns of Deiokes and Astyages. The conjecture of Darmesteter that the name Dahaka refers to a dynasty is there in a sense correct; he was, however, not right in imagining that that dynasty was a foreign, and probably a

Semitic, one. As a matter of fact it was the Median Dynasty and only the first and the last portions of it that was represented by Dahaka. The chronicles combine in one the glories of the reign of Deiokes and the crimes, cruelties and captivity of Astyages.

It is a historical curiosity that the title of Bæwaraspa which is so often given to Dahaka was used as a proper name ("Baiorospos") of an official in the Tanais, on the Northern shores of the Black Sea about the year 220 A.D. (see Justi, *Namenbuch*, p. 61, quoting from Latyshev, II, 237). This shows, on the one hand that Dahaka's name and history were known not only in Persia and Armenia but also in far northern latitudes. One can also infer that his reputation in those regions was not so evil as it was in Persian chronicles. We are reminded here of the statement of Eduard Meyer that the Median Dynasts of the house of Dahak had friendly relations and alliances with the people of Scythia. The Dinkard also mentions the fact that the predatory races of the north were favourably inclined to Dahaka and called him "the good sovereign of both demons and men" (Dinkard, Book IX, Chap. 21, verse. 21).

DAHAKA IN THE LEGENDS

Few historical personages have gathered round themselves legends from such diverse quarters as Dahaka. The legendary genealogy of Dahaka given in the Bundelesh shows striking affinities to the Hellenic legends of Gorgon family. The fall of Dahaka at the hands of Feridun finds a parallel in the great struggle between Bel-Marduk and Tiamat; and even some of the details of the Iranian and the Babylonian narratives are strikingly similar. It need hardly be said that Azi Dahaka was identified with the demon Azi of the Avesta. Envisaged in this way the legend of Dahaka becomes a striking example of the inter-national transmission and inter-relation of myths. If ever comparative mythology comes to be taught like the science of law through the medium of "leading cases", then the legend of Dahaka will form one of the most important and most instructive of such "leading cases".

(1) AZI DAHAKA IN THE AVESTA DEMONOLOGY

Ancient Persia possessed picturesque dragon legends, like other countries of antiquity—Egypt and Babylonia, India and China. The cult of the fight between Ahi (or Vritra) and Indra was widely spread among the Indo-Aryans. But while in other countries, like India, the dragon was the symbol of drought and of darkness (and while in China and Babylonia it also represented destructive floods), in Persia it also symbolised moral evils. From the list of demons which we possess in the Ardibehisht Yasht the great importance of the "dragons' or snakes' brood"

(Azichithra) in the demonology of the Avesta (Yasht III, 8, 10, 15). Among the legendary and monstrous forms of the dragon (Azi) two were specially noted in the Avesta—the Azi Srvara (“the horned dragon”) and Azi Dahaka—a monster with three heads and six eyes, (Yasht 9, 8). Thus the Avesta had a developed dragon mythology; and the mythological traits were easily transferred to a historical personage who happened to be sufficiently well hated and whose name sounded similar to that of Azi Dahaka.

(2) RESEMBLANCE BETWEEN THE LEGEND OF DAHAKA AND
THAT OF THE GORGON

From the point of view of Comparative Mythology a great deal of interest attaches to the legendary genealogical table of Dahaka preserved for us in the Bundelesh. In fact that genealogy suggests that, mythologically, Dahaka was closely allied to the family of the Gorgons, the Graeae and others descended from Phorkus or Phorcys (a sort of “old man of the sea”)—a family which has been immortalised in classical legends. The very names in the two genealogies the Greek and the Iranian are highly suggestive of the close parallelism. We remember that, according to the Bundelesh, Dahaka was descended from Fravak (a semi-human personage) through Taz (Bund, XXXI, 6-7) at the same time, the Shahnameh informs us that Dahaka had a grandson named Gurgoe or Gorgoe—a dreadful warrior who measured swords with both king Minuchihr and the hero Kereshasp. This genealogy is very reminiscent of the line of Phorcys or Phorcus who was the father of Thoosa. By his sister Ceto Phorcys became also the father of serpentine beings—the Gorgons and the Hesperian dragon, among others. The close resemblance of the names Fravak and Phorcus, Thoosa and Taz, Gorgon and Gurgoe is obvious. It is a curiosity of comparative mythology, when we consider the serpentine character of both genealogies.

The analogy can be traced not only as between the names of the houses of Fravaka and of Phorcus but between the legendary characteristics of the mythical beings included in them. Phorcus or Phorcys has been described for us as a sort of “old man of the sea,” descended from Neptune and Gea. In fact Phorcus was a semi-human being and the ancestor of Thoosa as well as of serpentine offspring like the Gorgos (especially the dreadful Medusa) and of the Hesperian dragon. By Hecate he became the father of another semi-human terror-Scylla. The mythological characteristics of Fravak are not dissimilar. Bundelesh, XV, 31 informs us that while there were ten varieties of men, fifteen races of semi-human monsters owed their origin to Fravak. Thus, like Phorkys, Fravak was the ancestor of half-human and terrible mytho-

logical beings. The next in descent from Phorkus was, according to Hellenic legends, Thoosa; according to the Bundelesh Taz was the successor of Fravak. It is to be noted that the genealogy comprising Fravak, Taz and Dahak is to be found not only in the Bundelesh but also in authorities like Tabari, Alberuni, Ibn Athir and Hamzah.

The analogy between Dahaka and the Gorgon family might be pressed further. Both Dahaka and the Gorgon Medusa were handsome and well-beloved personalities in the early part of their careers. It was on account of the sinful conduct of the Gorgon that Athena's curse transformed her into a terrible object with snakes on her head. Similarly, we read in the *Shahnameh* that Dahaka was tempted by the Eblis to commit various crimes, and then the latter rewarded the prince for his aptness in crime by endowing him with two snakes on his shoulders. Nor should we forget that in the *Shahnameh* we read of the exploits of Gurgoe—a grandson of Dahak—who fought on the side of Salm against king Minuchihr (cf. the *Shahnameh* 1, 298, 1057; Justi, *Namenbuch*, p. 122). In some editions of the *Shahnameh* the name of this warrior is given as Kakui, but as Justi has observed Gurgoe is the better reading (Justi, *Namenbuch*, p. 152). The tradition relating to this Gurgoe, grandson of Dahak, must have been a strong one, for there are two versions of it in the *Shahnameh*. In one version he fights king Minuchihr and is overthrown by the king with great difficulty. According to the second version, it is Salm who has the honour of vanquishing Gurgoe after a fierce battle.

As we have seen, both the Bundelesh and the Greek mythology preserve legends about monstrous races which once existed by the side of the human race. The Greek myths associate such races with the ocean, and generally they either arose out of the ocean or live in islands. Such were the Graeae, the dragon of Hesperides and Phorcy's himself who was the offspring of Neptune and Gea. But it is the Babylonian mythology which is richest in this sphere. The legends of Babylonia tell us most about "the abyss of water wherein resided most hideous beings, which were produced of a two-fold principle. Men appeared with two wings, some with four and with two faces.... Other human figures were to be seen with the legs and horns of goats. Some had horses' feet: others had the limbs of a horse behind. Bulls likewise bred there with the heads of men" (cf. Alexander the Polyhistor). We are here reminded of the Bundelesh account of the various races of the earth and water. We shall also see that it is in the Babylonian myths that we shall find the best analogies of the Dahaka legend.

(3) THE INFLUENCE OF THE MARDUK-TIAMAT LEGEND

Thus while the parallel between the legends concerning Dahaka and those of the Gorgons is most interesting in these days of Western culture, it was the myth of Bel-Marduk which, originating from Mesopotamia had the most important formative influence on the Dahak myth of Iran. We need hardly emphasise the importance of the influence of the Bel-Marduk story on the mythology of several nations. As Dr. Max Müller of the University of Pennsylvania has observed "after 2500 B.C., the Asiatic myth of the combat between the god of heaven and light (Bel-Marduk) and the abysmal dragon of the ocean (Tiamat) penetrated into Egypt, where it gave rise to the story of the gigantic serpent 'Apop' the enemy of the sun-god" (Max Müller, *Egyptian Mythology*, p. 104). The great Babylonian myth has influenced various books of the Bible (the Revelation, the Book of Esther and the Apocalypse of Baruch); it has also influenced the thoughts of the Gnostics and other sects. It can easily be imagined that the cosmology of the Babylonians, embodied in a fine "epic of creation" was even more likely to impress the imagination of the Median tribes. Indeed, it would appeal even more to them, partly because it was based on the Dualistic idea which was inherent in all Iranian thought. Again, like the Gorgon cycle of the West to which we have referred and also like the Fravak legends of Iran to which the Bundeshesh refers, it gratified the human imagination by furnishing accounts of an age when side by side with early man there flourished strange monsters, hybrid formations, half-man, half-animal" (cf. Jastrow, *The Religion of Babylonia and Assyria*, p. 419).

Just as in the Shahnameh, the Eblis prepares Dahaka in order to be the scourge of mankind, and as in the Avesta the Angra Mainyush forms Azi Dahaka as the great Druj for harming the world, so Tiamat created a certain number of associates of monstrous character and appearance in order to carry on the strife with the gods. The description given in the Babylonian epic of the nature and appearance of these monsters is reminiscent of Firdausi's epic as well as of the Avesta accounts. These demons, as the Babylonian epic says, were :

"Strong warriors, creating great serpents,
Sharp of tooth, merciless in attack.
With poison in place of blood, she filled their bodies
Furious vipers she clothed with terror,
Filled them out with awful splendour,
Made them of high stature
That their countenance might inspire terror and rouse
horror
Their bodies inflated, their attack irresistible
She set up basilisks, great serpents and monsters

A great monster, a mad dog, a scorpion-man,
A raging monster, a fish man, a great bull
Carrying merciless weapons, not dreading battle”.

The last verses refer to the chief of these monsters Kingu (Jastrow, *op. cit.*, p. 420) who worthily represents the Azi Dahak of the Iranian legends. In the Avesta as well as in the Shahnameh the Evil Powers find their great champion in Dahaka—so also in the Babylonian epic:

“She (Tiamat) has exalted Kingu; in their midst she has
raised him to power
To march before the forces, to lead the host,
To give the battle-signal, to advance to the attack
To direct the battle, to control the fight,
To him she has entrusted”.

(King, *Babylonian Religion*, p. 65.)

Much time elapsed before the gods could find a champion who was willing to face this serpentine terror. That is why the Iranian Epic and legends, too, have to assign a long reign to the wicked Azi Dahaka. At last the Babylonian gods found a hero Marduk who undertook to “become your avenger, binding Tiamat”.

Let us now come to a few characteristics and attributes of the hero Feridun in the Shahnameh and see how they fit into the Babylonian legend of Marduk and Tiamat. In the Shahnameh, the avenging hero Feridun had for his foster-mother a cow (“Pur Maya”). That Feridun was a “bull” hero is shown not only by his bearing a bull-headed mace (“Gurz-i-Gaw-Sar”) but by the fact that his brother Barmayun was a male ox (Dinkard, Book 9, Chap. 21, verse 22) while his father was Aspiyan-Tora (Bundehesh, XXXI, 7). This idea is not wanting to the legends of the solar heroes of Babylonia and Egypt. Thus in Egypt among the symbols of birth of the sun-god Osiris the Cow is a prominent one (Max Müller, *op. cit.*, p. 71); and in the Babylonian legends Marduk figures as a sun-god as well (King, *Legends of Babylonia and Egypt*, p. 129) while he is connected with the Egyptian Osiris through his name “Asari”. In fact, Marduk or Amuruduk probably signifies the “young steer of the day” (Spence, p. 202). Finally the banner of Marduk or Asshur bore no less than three bulls—Thus both Marduk and Feridun were “bull spirits”.

Then again, according to the Shahnameh, the hero Feridun has for his chosen weapon the bull-headed mace (گاو سر) with which he overcomes Dahaka. The mace is also the favourite weapon of Marduk who, according to the Babylonian epic “with his club unswung smote the skull” of Tiamat (Sayce,

Hibbert lectures, p. 383) and "broke it". Similarly we read of Feridun in the Shahnameh that

بدان گرزۀ گاو سر دست برد برد بر سرش ترک او کرد خورد

"he seized the bull-headed mace with his hand and smote with it the skull of Dahak which became shattered". And as regards the "bull's-head", that too is connected with the tale of Marduk. For, "the rôle played by Marduk in the Babylonian version of creation has been borrowed from Enlil of Nippur"; and Enlil was "the bull of goring horns.... Enlil the bull" the god of fertility as well as of battle (King, *Legends of Babylonia and Egypt*, p. 109, Langdon's *Sumerian and Babylonian Psalms*, pp. 199, D. Mackenzie, *Myths of Babylonia*, p. 159). It might be added that good authorities believe that Marduk was very likely a bull-god" (Spence, *Myths of Babylonia and Assyria*, 93) and "in early astronomical literature we find him alluded to as the bull of light". Indeed the probable meaning of the name Marduk or A-maruduk was "the young steer of day" (Spence, 202). Thus the Babylonian legends fully account for the bull-mace as well as for the cow foster-mother of Feridun.

There are other important attributes which were common to Marduk and Feridun. Like Feridun who possessed the Khwareh (or glory) "a light burned on the head of Merodach and he was clad in a robe of terror" (D. Mackenzie, 145). But the resemblances do not stop here. The name of Marduk was "perhaps most frequently used to carry destruction into the ranks of the demon army" (Spence, 263). In fact, it was a word of power "to defeat and scatter the hordes of evil things that surrounded and harassed mankind". Just so, in the *Vanant Yasht*, the name of Feridun was used as a word of power against evil spirits. Finally, we note that according to the Shahnameh, Feridun entered the battle in order to avenge his father. So also we read about Marduk that

"Before his fathers as counsellor he took his place" and these fathers (the gods) thus addressd him :

"O Marduk, thou art our avenger".

(King, *Babylonian Religion*, 68-69)

If once experts in Iranian Archæology became convinced of the close analogy between the legends of Marduk and Feridun the way might be opened for a reconsideration of the origins of the famous "Gawyani" standard. It will be remembered that Marduk was a bull-god and that he was identified with the god Asshur (Spence, *op. cit.*, 94). It is obvious why Asshur was symbolised and represented by a military standard consisting of a pole on which there was a disc whereon the god was depicted as an archer or strong warrior standing between

two bulls (Spence, p. 208). Between the disc and the top of the pole was again a large bull's head with horns outspread. In fact the symbol had a triple representation of the bull on it and was a true "bull-banner" (Darafash Gawiani) in every sense of the word. When we remember that the first Median king (Deiokes) imitated Assyrian architecture and court-etiquette in his country, there would be nothing surprising in his adopting the Assyrian military symbol in at least a modified form. And, indeed, ancient tradition, as embodied in the *Shahnameh* does associate both the old Iranian banner (Darafash-i-Gawiani) as well as the throne with the age of Dahak. If the banner of Asshur and Marduk corresponds in its details to the Gawiani banner of Feridun that fact might not be a merely accidental affair.

THE BABYLONIAN GOD "GAGA" AND THE PERSIAN HERO
"GAWEH"

Before Marduk begins his fight with Kingu and Tiamat, the god Anshur sent his minister Gaga, to summon a council of the gods and to carry the tidings of the revolt of Tiamat. In fact it is the message of Gaga which decided the gods to declare against Tiamat. Perhaps, it is not a mere coincidence that the name of Gaga is very similar indeed to that of the hero Gaweth who interviewed and defied Dahak and then brought powerful succour to Feridun. But in the Iranian legend the hero Gaweh is a far bolder person than his Babylonian prototype and defies the tyrant Dahak to his face. On the other hand Gaga is afraid of the tyrannical Tiamat and her crew, and only ventures to send in his message through the hands of others. Perhaps some of this abnormal courage shown by Gaweh in the Persian epic should be ascribed to Firdausi himself. That poet not only signalised himself by defying the tyrant of Ghazni, but never misses a chance of making his heroes defy kings. But in the present case Firdausi's account of Gaweh's courage is borne out by the *Sad Dar* (Chapter 62, section 5; cf. West, *Pahlavi Texts*, Part III, p. 323). Putting this aspect of the narrative aside, the roles of Gaga and Gaweh in the two episodes are similar and consist in securing assistance—in the one case divine, in the other case human—for Marduk and Feridun respectively.

FIRDAUSI'S "ARMAEL AND KARMAEL", AND THE BABYLONIAN
"ANSEAR AND KISHAR"

The curious sub-episode of Armael and Karmael as narrated by Firdausi (in the course of his legend of Dahaka) has claims to our special consideration. According to the poet these beneficent persons managed to save a number of possible victims from the clutches of Dahaka; and it was from the

persons thus rescued that, as the poet informs us, the Kurds were descended. The names Armael and Karmael were obviously either borrowed from the Babylonians or were meant to be good enough imitations of Babylonian names. Thus in the Bible the names Adrammelech and Sharezer (II. Kings, 19; 37) are introduced as passable imitations of Assyrian names.

It is submitted here similarly that by Armael and Karmael were really meant the gods Anshar and Kishar who, according to the Babylonian legends had a great part in foiling the designs of the evil-being Tiamat and in helping forward the enterprise of Marduk. Further, it was the primeval god Anshar and his spouse Kishar who strove to reconcile Tiamat and her following to the high gods and did their best "so that her anger may subside and her heart be made merciful" (Mackenzie, *Myths of Babylonia*, p. 142). As in the Persian epic the beneficent beings Armael and Karmael do their best to moderate the tyranny of Dahak, so in the Babylonian legend Anshar and Kishar try to reconcile the monster Tiamat to the orderly and ethical ways of the gods. Thus Anshar sent both his son Anu and the god Ea to try to appease Tiamat's anger, but the results of these efforts proved disappointing (King, *Babylonian Religion*, p. 63).

It need hardly be said that the outcome of the combat between Marduk and Tiamat was very similar to the event of the fight between Feridun and Dahaka. In the Shahnameh, Dahaka is represented as putting up no great fight against Feridun though he made a vain effort to assassinate the latter; and on the failure of this attempt Dahak was taken prisoner. So in the Babylonian poem :

"As (Marduk) gazed, (Kingu) was troubled in his gait,

"His will was destroyed and his movements ceased

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"They took to flight to save their lives;

"In an enclosure they were caught, they were not able to escape.

"He took them captive, he broke their weapons

"In the net they were caught and in the snare they sat down."

(King, *Babylonian Religion*, pp. 73 and 75.)

In the case of Tiamat also the struggle was but brief and she was caught in the net of Marduk :—

"She was like one possessed, she lost her senses,

"She uttered loud, angry cries

"She trembled and shook to her very foundations

"The lord spread out his net to catch her".

(King, *Babylonian Religion*, p. 73.)

Later, we find Marduk splitting Tiamat up into two halves and

“One half of her he set in a place as a covering for the heavens

He fixed a bolt” (*ib.*, 77).

The procedure is very similar in the *Shahnameh*; only in this case Feridun is made to use a lasso instead of a net to capture Dahak. The latter is taken bound by the lasso to the lofty mountain Damawand to which he is bound by heavy nails. The scheme of tying Dahaka to a lofty mountain by nails resembles, in the main, the idea of tying up Tiamat to the sky by a bolt.

It does not necessarily follow from the above argument that the Iranian legend of Feridun and Dahaka is only the counterpart of a Semitic myth (that of Bel-Marduk and the dragon) or that it is, therefore, of a Semitic origin. For high authorities like Dr. King believe that the Babylonian dragon myth was evolved originally by the Sumerians, who were a Non-Semitic race who occupied the land of Babylonia many centuries before the Semites entered it (King, *Babylonian Religion*, pp. 2-3; King, *Legends of Babylon and Egypt*, p. 119 note). In particular, it is believed that Kingu was a personage of Sumerian mythology (*ib.*, p. 118). As Dr. King has observed “the very names borne by Tiamat’s brood of monsters in the Seven Tablets are stamped in most cases with their Sumerian descent, and Kingu, whom she appointed as her champion in place of Apsu, is equally Sumerian”. The ultimate and real origin of the legends of Feridun and Marduk might therefore well be a very early Iranian myth. In this connection it might be noted that in the Bhandarkar Commemoration volume the late Mr. B. G. Tilak has drawn attention to the analogy of certain Vedic myths about Indra and Vritra to the Bel-Marduk legends.

CONNECTION BETWEEN THE HISTORY OF DAHAKA AND THE DRAGON-LEGENDS

Having thus given a brief account of the various dragon legends of the East and the West which left their traces on the story of Dahaka we come to what is perhaps the most interesting problem in our thesis. How was it that the first king of Media happened to become the centre of a unique mass of dragon legends? In attempting to suggest an answer to this problem it will be shown that some of the intense unpopularity which is implied in the legends was due to the policy of Dahaka; but that far the greater part of the odium was incurred by the ferocious behaviour of his grandson Astyages whose sins were visited on the memory of his grandfather Deiokes. It might also be added that not a little of the terrible associations of the age of Dahaka was due to the havoc wrought in that age by the

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great Scythian invasion which devastated not only Iran but Assyria, Syria, and Palestine. For there are historical reasons for holding the policy of the Median dynasty to be at least partly responsible for the Scythian incursion.

Considering the position which he occupied and the policy which he had to pursue, Deiokes (Dahaka) could not possibly have escaped a great deal of opprobrium. To weld together a congeries of tribes in a country like Persia—where the tribesmen have highly individualistic ideas—was a task only for a hard-handed man. The task of Deiokes (Dahaka) was the harder in those days, in that these tribes were not quite homogeneous; there were under him the Medes and the Mannai of Atropatene (Huart, 28) and possibly Armenian and even Scythian elements. The Bundelesh (XX, 23) also refers to Atropatene as the scene of his activities. A very good modern analogy for the task before Deiokes would be the work which Nadirshah did in the way of bringing under his firm rule the various tribes of Persia before he aspired to royalty. In carrying out his object Nadirshah had to fight numerous battles, inflict punishments on thousands, and had to transplant and expropriate a large number of tribes. From the hatred felt for Nadirshah we can judge of the feelings roused by Deiokes.

His imitation of the Assyrian court-etiquette and of the magnificent architecture of the Assyrian and Babylonian princes must have contributed considerably to his unpopularity (Huart, *Ancient Persia*, p. 29-30). It is possible that Deiokes acquired these ideas during his exile at Hamath (*ib.*, 28). The fort at Ecbatana with its seven concentric walls built by Deiokes and described by Herodotus (I, 98-99) was certainly necessary for royal security; but the gilded, plated and painted battlements were mere costly luxuries which the Median nation must have paid for with some difficulty. When reading the account given by Herodotus of the splendid fort and city of Deiokes, of the magnificent public works, one is reminded of the great architectural activities of King Solomon and of the heavy financial burdens which they necessitated.

Discontent must also have been engendered by the punctilious court-etiquette and ceremonial which was instituted by Deiokes. Though useful in some respects, these ordinances must have appeared as an "introduction of violent tyranny and of most arbitrary power". One reason why Dahaka and his dynasty were called "Babylonian" in the Avesta was no doubt the imitation of Assyrian etiquette and architecture and his policy of keeping well with Assyria. This policy of good relations with Assyria was also maintained for a time by his son Phraortes (Huart, 30); and that prudent policy was later abandoned by that son with disastrous results. But the alliance which their successors Cyaxares and Astyages maintained with Babylon must have soon furnished an additional

reason for the appellation "Babylonian" as applied to Deiokes and his line.

It has been alleged both in the *Shahnameh* and in the *Dinkard* (Book IX, Chap. 21, s. 12-13) that Dahaka was too fond of adding choice beauties to his seraglio. It is not improbable that the Median monarchy lost no time in imitating the polygamous practices of the earlier royal lines of the East.

In any case the discontent excited by the policy and measures of Deiokes himself was not excessive, as we can infer from his long reign of 53 years. The cessation of Assyrian raids was, his subjects must have felt, some compensation at any rate for the new tyranny. It was the ferocious oppression and conduct of his grandson Astyages and the loss of Median independence owing to the misconduct of the latter which brought the dynasty into great disrepute with the Medes; and this disrepute was reflected on Deiokes who was the founder of the line. The cruelty with which Astyages treated nobles like Harpagos and his ferocious treatment of the Magi and others have been narrated by Herodotus (I, 119 and 128). The father of history has also informed us of the hatred entertained towards Astyages by the Medes for his being the cause of the loss of their empire and independence (I, 130).

From Armenian history we can gather accounts which show that it was owing to the ferocious character of Astyages that his descendants were called "Dragons." Thus, Father Chamich observes that Ahasuerus, king of Media—who was at war with Cyrus—also invaded Armenia. Ahasuerus was, however, defeated and his wives and children were taken prisoners by the Armenians and were settled in Armenia. "The descendants of these women, proceeding from the king of Media, were thence-forward called the offspring of Ajdahak or the Dragon, in allusion to the name of Ahasuerus, which, in the Armenian language, signifies a dragon" (Father Chamich, *History of Armenia*, Vol. I, pp. 41 and 43). We note also that the only king of Media who fought Cyrus was Astyages. It is very likely the names of Astyages (pronounced as Ashdahak by the Armenians) suggested identification with the Avesta name Azi Dahaka, and this similarity of names was turned to account by contemporary hatred and malice. It has also been conjectured that the name "Mar" by which the Armenians knew the Medians also helped to associate the idea of "dragons" with the dynasty of Deiokes, since the word "Mar" also means a snake (Justi, *Namenbuch*, p. 47). This testimony of Armenian history is valuable in two ways. It definitely connects with Astyages the epithet of "Dragon" which he probably deserved by his cruel behaviour. It is also interesting to discover that some at least of his descendants were branded by history or at least by tradition with the same opprobrious epithet.

It is obvious that the Persian legend about Dahaka being

confined and chained in the mountains, where he is trying to snap his chains and whence he will break loose in the last days, was well known to the Armenians. These, however, have transferred the legend from Dahaka to a wicked king of Armenia called Artavazd who ruled about 130 A.D. The Armenians believed, says Father Chamich, "that he still existed but in a cell, and confined with chains of iron. Near him, it was also said, were two dogs, continually gnawing his fetters for the purpose of releasing him; in the event of which, it was predicted that he would conquer the world. But, so the story went, these chains were continually strengthened by the strokes of blacksmiths' hammers. Even to the time of Chorenensis, the belief in this fable was so strong in the minds of the ignorant blacksmiths, that they were accustomed, on Sundays, to give three or four blows with their hammers on their anvils "so that the captive might not get loose during their cessation from work". (Chamich, *History of Armenia*, vol. I, pp. 146-147.) Obviously, here is the Iranian legend of Dahaka's fate passed on to a well hated Armenian prince. It is also interesting to note that it was a blacksmith (Gaweh) who according to the *Shahnameh*, helped to bring about the downfall of king Dahak. It might well be that the identification of the line of Deiokes with the dragons was initiated in Armenia and was taken up in Persia later.

No doubt we are here on the track of the cycle of legends allied to that of Loki who will some day "burst his triple chain"; but there were special circumstances relating to the fall of the dynasty of Deiokes to which such legends could be attached and fitted. We remember that when Astyages was defeated by Cyrus the former was sent in chains to the regions of Hyrcania. The Medes, however, who hated Astyages for his cruelty of temper (Herodotus I, 130) would naturally be apprehensive that some day he would return from his banishment to play the tyrant once more. The legends which we have related mark their anxiety in this respect.

But besides the ferocious deeds of Astyages, there were other circumstances relating to the dynasty of Deiokes which seemed to qualify him for the place which he occupied in the Apocalyptic literature of Iran and Armenia. It was under his dynasty that the most terrible invasion of the Scythians recorded in history took place. It swept over Assyria, Media, Armenia, Syria, and Palestine and reached Egypt where Psammetichus fought the terrible invaders off. The peoples of these regions must have been convinced at the time by the fearful happenings that the end of the world had indeed come. The religious literatures of three several religions bear witness to this general feeling. The Iranian traditions came to associate the dynasty then ruling with the end of the world: Jeremiah's Scythian songs and the writings of Ezekiel and Habakkuk bear

witness to their terrible memory in the Old Testament. Through the Gog and Magog mentioned by Ezekiel the Scythian hordes appear also in Muhammadan accounts of the last day of the world as Yajuj and Majuj. It was with these terrible happenings which have symbolised the end of the world for over two thousand years that the house of Deiokes was associated.

It is also quite probable that the Scythian incursion was in a sense to be attributed directly to the policy of Deiokes and his house. As Eduard Meyer has observed, the Median dynasty had been in the habit of allying themselves with the Cimmerian tribes and chieftains in order to strengthen themselves against Assyria. That was of course a dangerous game to play; since the Scythian tribes once induced to enter Iran and Mesopotamia as the allies of Media might take up the game in their own interests. In this way some of the hatred felt for the Scythians might be with some justice transferred to Deiokes and his dynasty.

CONTRASTED TREATMENT OF DAHAKA AND HUWAKHSHATARA IN THE APOCALYPTIC LITERATURE OF IRAN

Once Dahaka was identified with the Dragon he was sure to play a leading part in the Iranian Apocalypse; for the unchaining of a great Dragon or fiend was an essential element in the Apocalyptic scheme of a great many nations—Babylonian, Iranian, Hebrew, and Scandinavian, among others. Even nearer to the Dahaka legend in this respect—and very likely not uninfluenced by it—is the account in the Syriac Apocalypse of Ezra: "Let these four kings be loosed which are bound near the great river Euphrates which shall destroy a third part of mankind". So also in the book of Revelation we read of "the four angels loosed which were prepared for to slay the third part of men". It is not a far cry from the kings imprisoned in the Euphrates to the king imprisoned on Mount Damawand.

But it is even more interesting to contrast the very different treatment meted out by the apocalyptic legends of Iran to two Median kings—Dahaka and Huwakhshatara (Cyaxares). While the more ignoble part in the Iranian Apocalypse has been assigned to the hated Dahaka on account of his own faults or those of his successors, Huwakhshatara has been made one of the great heroes of the Apocalypse. For he was undoubtedly regarded as a popular hero by the Medians, who remembered with pride his glorious victories over the Assyrians and Sythians.

I venture to suggest that in the name and exploits of the hero Hushidar (who is to begin the task of saving and renewing the world), we have a reference to the name, career, and successes of the Median King Huwakhshatara; and that the personality

and exploits of the latter have been superimposed upon those of the old Saviours Astawad-ereta or Astvaturta (as the name is read by Lommel). In fact the personality of Hushidar is in the main the personality of the historical Huwakhshatara projected into the remote future. Just as one great Median King—Dahaka—has been put forward as the champion of evil, so the most popular of the Median line—Huwakhshatara is made to represent the good side. All this, I submit proves the influence of the Median historical reminiscence on the development of the religious tradition of Iran. I beg to submit the following grounds for the identification which I propose:

(a) It is obvious that the later name Hushidar is linguistically nearer to the name Huwakhshatara (with its Babylonian form Uwakuishtar) than to the Avesta designation of Astawad-ereta or Astvaturta. Stonecipher in his "dictionary of Graeco-Persian Names" identifies the Iranian names Oxathres and Oxuathres with Huwakhshatara and we can see how near these names are with the Pahlavi name Hushidar or Aushedar. I submit that the name Hushidar can be derived from the royal name without much difficulty.

(b) The Avesta does not furnish us with any details of the exploits of Astawad-ereta. The Zamyad Yasht only informs us that he wields the same victorious weapon which the warrior Thraitauna carried when he struck down Azi Dahaka. But later tradition evolved various exploits of Hushidar which are preserved for us in Bundelesh as well as in the Bahman Yasht. The Bahman Yasht (III, 5) lets us know how in the last days a vast army consisting of the Assyrians, Greeks, and Romans as well as other old foes of Iran will advance eastwards and will have to be met and defeated. The mention of the Assyrians and of their defeat by Varajavand and Hushidar assisted by a band of resuscitated heroes of old Iran makes it highly probable that the great conqueror of Assyria was to be numbered among this glorious band. In the task of "slaying the Assyrian people", "destroying their abode" and "the lurking holes of the demons" (*Bahman Yasht, III, 5*) no one could conceivably take a larger or more appropriate share than Huwakhshatara who had broken the tyranny of Assyria and had destroyed Nineveh and other Assyrian strongholds. No one could also be called upon more appropriately to stem the tide of the last invaders of Iran than he who broke up the great Scythian invasion which is remembered in the Apocalyptic literature of so many nations.

Reading together Bahman Yasht, III, 5 and III, 6, we find that it was one of the tasks of Hushidar and his allies to "slay the Assyrian people, destroy their abode and the lurking holes of the demons". For obviously it is only the party of the righteous heroes which could be expected to destroy "the lurking holes of the demons". Such an account of the happenings of the Millennium and of the exploits of

Hushidar and his Iranian allies shows how little the Iranians had forgotten the invasions and cruel oppression of the Assyrian conquerors. It is also to be noted that it is not only in the Bahman Yasht that Hushidar and his allies are described as invading Assyria and inflicting retaliation on it. In fact, the statement in the Bahman Yasht is corroborated by the Persian Revayet of Nariman Hoshang. That Revayet of Nariman Hoshang informs us that Vahram Varajavand (the great ally of Hushidar) will start his expedition from the mountainous regions of Turkestan and Tibet and will, in the course of a nine years' war, *extend his conquests to Babylon*. (Cf. Darab Hormazdyar's Revayet, edited by Dr. J. J. Modi, Vol. II, pp. 67-68). It is remarkable that the memories of Assyrian wars lasted in Persia as long as any religious traditions were left to transmit to posterity.

(c) It might also be noted that just as there were two heroes of the name of Hushidar in the Iranian Apocalypse (Hushidar and Hushidar-Mah,) so there were two Huwakhshataras known to the history of Media. The first was of course the great conqueror of Nineveh. But there was another prince of the same name who was the son of Astyages (Justi, *Namenbuch*, pp. 140; Xenophon, *Kyropoedia*, I, 5, 2). It was this latter prince, or a pretender (Frawartish or Khshathrita) who had assumed his name, who long opposed Darius and fought for a revival of Median independence. The Medes had thus cause to glory in the names of two Huwakhshataras—the one who was the author of their national greatness while the other was the last hope of the Medians against the Persian domination. Both would naturally be remembered with regret by the Medians and their reappearance would be devoutly expected—as was the reappearance of Kai Khosru in other parts of Iran and that of the hero Kerešasp by the men of Sagistan. So also the men of Parthia who must have been proud of the memory of Gotarzes and his father Giw expected the reappearance of Giw in the last days; consequently, Giw, too, is one of the immortals (Bundehesh, XXIX, 6). It is noteworthy that all these representative heroes of various parts and dynasties of Iran are grouped together in the Pahlavi accounts as "immortals" who will assist in the "production of renovation" by the side of Hushidar (cf. *Dadistan-i-Dinik*, chap. 36, sec. 3). It would appear as if the Iranian apocalypse, as we now have it in the Bundehesh, the Bahman Yasht and the *Dadistan-i-Dinik*, is a combination of all the local legends about the last days and the happenings of the millennia—a kind of *variorum* edition of provincial accounts.

(d) I now come to what I hope will be regarded as another strong argument for the identification of the names of Huwakhshatara and Hushidar. In the Pahlavi literature we read of the expected co-operation of Hushidar and Chitragmiyan

(cf. Dinkard Book, IX, chap. 41, sec. 6; West, P. Texts, I, 117, 195, 224)—which is another name of Peshotan—in the renovation of the world. Now it can hardly be a mere coincidence that in later Median history a Huwakhshatara and a Chitrantakhma are historically found together—co-operating against Persian domination. For in the Median insurrection against Darius and the Persian rule we find a Frawartish (or Khshathrita) who was or pretended to be Huwakhshatara the son of Astyages (Behistun, II, 15; IV, 19-20). At the same time and on the same side was fighting a Chitrantakhma who professed to be (or who really was) a descendant of Huwakhshatara (Justi, *Namenbuch*, p. 140; Huart, *Ancient Persia*, p. 52). It is quite conceivable that it was this co-operation of a Huwakhshatara and a Chitrantakhma in the last effort to revive Median power which gave rise to the expectation about the co-operation of a Hushidar and a Chitrag-Miyan in the Iranian Apocalypse. It is very likely that the Medes regarded them as national heroes who were going to appear again some day to restore Median power. Nor should we convince ourselves on the mere word of their enemy Darius that these princes were mere pretenders. They may well have been scions of the old Median line.

(e) Two facts throw a great light on the place and time of the evolution of the Apocalyptic traditions of Iran. The first is that even kings of the later Arsacide dynasty are included among the band who are to assist the Saoshyant in his work. Thus, according to the Dadistan-i-Dinik, the king Giw will have a share in this work (West, P. Texts, II, 78); and historically Giw was an Arsacide prince and the father of Gotarzes who ruled in Parthia as late as A.D. 51. This example makes it still more probable that the most illustrious king of the much older Median line would also be included among the workers of renovation. The second significant fact is that it is only from among the heroes of Northern and Eastern Iran that the helpers of the Saoshyant have been selected. No one even out of the illustrious Achaemenid or Sassanide lines of Western Iran has been accorded that honour. This circumstance proves that the Apocalyptic traditions of Iran were developed in the Western part of the country where Median influences predominated. But if Median traditions guided the apocalyptic movement in Iran then it was more than likely that the greatest of Median heroes—Huwakhshatara—would figure prominently in it. Here is one more argument for supposing that the name Hushidar given to the future apostle was a reminiscence of the name of the great Median prince.

Dr. West has contended that in the name of another hero of the apocalypse—Vahram Varjavand there are mingled some reminiscence of the celebrated Persian general Bahram Chobin who lived under the Sassanides (West, Pahlavi Texts, part I

p. 221, note 1) He would have strengthened his argument if he had added that Bahram Chobin is said to have spent his last days in China (where he had fled after his attempt on the throne of Persia); and that Vahram Varjavand is "to appear in the direction of Chinistan", according to both the Bahman Yasht, III, 14 and the Persian Revayet of Nariman Hoshang. Nevertheless the fact that a former general of the Sassanides figures in a way among the heroes of Iranian Apocalypse does not go against my proposition that only princes of Median and Arsacide lines figure in that Apocalypse. For Bahram Chobin claimed to be an enemy of the Sassanides and a restorer of the Arsacide tradition and line which he attempted to resuscitate by overthrowing Khusrau II. In fact Bahram Chobin belonged to the House of Mihran which was of Arsacide origin.

The national genius of Iran which was particularly fond of historical reminiscence could only conceive of the last phase of the world as consisting of the resuscitation and clash of the great personalities of the past—whether bad or good. Azi Dahaka, who plays the leading role on the evil side, receives his "call" from Ahriman himself who assists him further by knocking off his fetters (Bahman Yasht, III, 53-56). Similarly, the first of the great heroes on the good side Hushidar (Huwakhshatara) receives his "call" from Mitro (*ib.*, III, 47) while Srosh and Neryosang arouse the other righteous heroes Peshyotanu and Kerešasp (*ib.*, III, 26 and 60). Obviously all these are heroes of the *past* of approved valour, though one of them is also—perhaps on account of his specially meritorious services to the Zoroastrian faith in the past—acclaimed as the spiritual son of Zarathusht. The great importance of this particular hero (Huwakhshatara) in the work of the final millennia is further emphasised by the appearance of the two successive apostles bearing his name (Hushidar and Hushidar-Mah) both having the same miraculous birth, power and functions. Indeed, a good deal of the Persian Apocalypse is a sort of summary of the main events of the past history of Iran. On the side of the evil appear the successive invaders of Iran—the Greeks, the Romans, the Arabs, and the Turks. Nor are the most ancient invaders—the Assyrians—forgotten (Bahman Yasht, III, 5). Obviously, through the ages the memory of their ferocity had been kept alive among the writers of our faith—and proportionately, the name of their conqueror must have been venerated.

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historical reminiscences on the Apocalyptic literature of Iran. For other parts of Iran had little experience either of "the Assyrian people" or of the "lurking holes of the demons" situated in *Asuristan*—among which we might safely infer, that Nineveh was included (Bahman Yasht, III, 5 and III, 22).

It is not only in the case of Iran that *Apocalyptic literature is only national history summarised and projected into the future*. Let us consider for a moment the book of Revelation in the Bible which has been well termed, "the blossom and fruit of a great apocalyptic movement". In this book in the thirteenth chapter we read of two beasts. The first beast with its ten horns represents the Roman Empire with its ten emperors. The second beast too represents the spirit of paganism and of Cæsar-worship. Among older enemies, Gog and Magog are also mentioned—the names referring to the old Scythian invaders. Obviously, Nero who did his best to deserve the hatred of the Christians appears as the protagonist of evil in the Christian Apocalypse as Dahaka does in the Iranian version.

Very great importance must be attached to this name "Shedaspīh," which in reality forms *the connecting link between the Iranian and the Christian Apocalypse*. As a matter of fact, "Shedaspīh" (Avest. Khshaetaspa i.e., the rider on the white horse) who is designated as Keresiakih (or Christian) is a reference to "him that sat on the white horse" (Revelation, chap. 19, verses 11, 14, 19, 21). It is, of course, most regrettable that owing to religious and political hostilities lasting over centuries, the most venerable figures of one religion should arouse intense enmity in the followers of other faiths. And it is more instructive to turn to the *resemblances between the two ancient systems of Apocalypse*. Among the common features we note:

- (a) the binding and the release of Satan or Azi Dahaka (Revel. ch. 20, v. 7).
- (b) the successive millennia *Ib.*, v. 3);
- (c) the great final battle at Armageddon in the Revelation which is comparable with the great fight in the plains of Nishanak in Bahman Yasht, ch. 3, verses 9 and 21).
- (d) the dragon-beast-prophet of Revelation, chs. 12 and 13 which corresponds again to Azi Dahaka. It is noteworthy that *several of these resemblances are accounted for by the common influence of the Bel-Marduk legend on both accounts*. Finally, the persecution of the woman and the child by the dragon in Revelation, ch. 12, is very reminiscent of Dahaka's treatment and pursuit of the infant Feridun and his mother—Gunkel—a distinguished commentator—believes that the above reference in chs. 12 and 13 of the book of Revelation is based

on the myth of Marduk. If he is right, we have here still another parallelism between the legends of Marduk and Feridun.

The fact emphasised above—that to the king (Dahaka) who happened to be unpopular with the Medians was assigned the Satanic part in the Zoroastrian Apocalypse, while the name of the monarch who was the most honoured by the Median race (Huwakhshatara) was connected with its brightest exploits—supports a well-known theory ably advocated by Prof. Gray of Columbia University. That theory is to the effect that primarily there were two distinct religious systems in Iran: the Persian (represented by the Achaemenian inscriptions) and the Median (represented by Zoroastrianism), cf. Gray, *Foundations of the Iranian Religion*, and Jackson, *Zoroastrian studies*, p. 210. We have seen in the present paper that the heroes of the Iranian Apocalypse are all taken from men of Media, Parthia and Sagistan. It is significant that none of the great Princes of the Achaemenid and Sassanide dynasties figure among the group of immortals. It is indeed a very significant fact that although Iran had been under the Sassanides for four centuries, and although the Sassanides hated the Arsacide traditions, yet Parthian Kings like Giw were recognised as ranking among the immortals. The inference is obvious, that the religious traditions of Iran—including those relating to the Apocalypse—were framed under Median and Parthian influences, which were upto the end strong enough to set at naught and override the political ascendancy and dynastic views of Western Persia. In this respect a contrast might be noticed between the treatment given to the respective royal lines by the Iranian religious works and by the Shahnameh. In the latter which is pre-eminently a political document the Sassanides were accorded a great deal of space, while the direct mention of the Arsacides was limited to a single paragraph. On the other hand, in the religious works the tables are turned, and the Median and Arsacides lines figure predominantly. This shows that the religious traditions were formed and carried on for the most part in the North and East of Iran.

'The Shahnameh and the Fêng-Shên-Yên-I

By SIR J. C. COYAJEE

It happens very rarely indeed in the history of literature that two great epics belonging to different nations devote considerable space to the same or very similar legends and incidents. In the rare instances where such a phenomenon presents itself it is a fascinating task to trace the course of the migration of the legends in question. That is, of course, the first and the chief task of the literary historian in such a case. But this work needs to be supplemented by a study of the different ways in which the two epics handle the same material and utilise the various component elements of the legends and myths concerned. In instituting comparison between the ways in which the epics utilise the common traditions, myths, and legends we have of course to consider differences of national psychology as well as of questions of religious and historical atmosphere.

In some earlier papers, I have dealt at length with parallelisms between quite a number of legends and religious cults of ancient Persia and China. That study led me to institute a comparison between the epic portions of the Shahnameh and the Fêng-Shên-Yên-I. The latter poem is the most popular and best known collection of poetic and religious legends in China just as in Persia, the Shahnameh easily holds the first place in the epics of Persia as regards poetic merit, epic grandeur, and popularity. The Chinese epic deals with the wars of the last emperor of the Yen dynasty and the action of human heroes in it has the fine background of the Taoist pantheon which retains almost intact the characters and personalities of the ancient Chinese religion and cults. A parallel study of the Chinese and Iranian epics will show a remarkably large number of affinities and correspondences between the heroic worlds of old Iran and ancient China. Mr. W. P. Ker and other students of epic poetry have remarked upon the resemblances between the Homeric and the Northern heroic world. But these resemblances are feeble and few as compared with the correspondences to be traced in the study of the Sino-Iranic epics. In the latter case the resemblances are wholesale. Sometimes, whole legends and characters are unmistakably common, at other times, incidents or poetic touches are found to have migrated. Thus the history and characters of the kings, Kai Kaus and Chou-wang, of the queens, Sudabeh and Su-Ta-Ki, and of the princes, Siawash and Yin-Kiao are wonderfully similar. So are

also the accounts of heroes and warriors like Li Tsing and Rustom, of No-cha and Sohrab. When we come to account for these striking resemblances a good deal might be said for the theory that the Saka race which lay geographically between old Iran and China supplied most of the common legends, *viz* : the legends of Li Tsing and of Rustom, of No-cha and Sohrab ; of the queens, Sudabeh and Su Ta-Ki. These form the most important of the common stock of the Sino-Iranic legends though as we shall see there are others like those of the demon Puladwand and the fighting magicians of Po-lu-tao, and such as relate to the famous "combat of the eleven champions" ("Jang-e-Yāzdeh Rukh") which cannot be traced back at present to the Saka cycle of legends. However, some of the resemblances might also be supposed to be due to the conscious or unconscious borrowing of the ballad-mongers and reciters of the two countries. Thus, the legends of the Feng-Shen-Yen-I are even now narrated and propagated by people who never read the book, as Dr. Wilhelm Grube informs us (*cf.* his translation of the Feng-Shen-Yen-I, p.vi). On the other hand, the legends incorporated in the Shahnameh were to a large extent derived from ballads, as we learn from Firdausi :

چو از جمله این داستانها بسی بخوانید خواننده بر هر کسی
جهان دل نهاده برین داستان همه بخردان و همه داستان

[When the reciters had recited these numerous episodes the whole world was attracted and fascinated.]

In a land of mixed population such as Central Asia has always been the legends of Iran and China would be brought into close contact, and transferences of legends, incidents, and characters were bound to take place through the medium of zealous ballad reciters—each of them eagerly desirous of improving and enriching his particular poetic repertory.

After we have seen the great similarity in the legendary figures of the emperors, Kai Kaus and Chou-wang, and other personalities we shall realize the resemblance in the general topics of the two epics. The Feng-Shen-Yen-I treats in the main of the events and wars of the reign of Chou-wang ; and the immortals—whether gods, saints, genii, or demons—mixed freely in these events. The Chinese epic thus in a sense deals with the struggle of the good and evil powers in which the good powers finally succeed. So also the epic portion of the Shahnameh (as contrasted with the historical portion) deals mainly with the events and wars of the reign of Kai Kaus. To a certain extent supernatural agency is employed in the Persian epic also. But we might be sure that in the pre-Islamic versions of the same episodes the supernatural agency must have played a much greater part in that epos as we see from certain survivals in the Pahlavi writings. Indeed, in the Bahman Yasht,

the wars of Kai-Kaus are represented as a tremendous contest between demons and archangels (S.B.E., vol. V, pp. 217-218). Thus, in an important sense the main topic of the Feng-Shên-Yên-I as well as of the epos of old Iran is identical—a great struggle in which gods, saints, angels, and ordinary men take part and in which the just cause finally triumphs.

However, in the Iranian epic in its present shape makes far less use of supernatural agency than the Chinese poem: and in this lies both an element of weakness and of strength for the former. In the Feng-Shên-Yên-I, too wide a scope has been given to supernatural interposition and action, and the gods and genii interfere too much in the main action of the poem. Moreover, the weapons used by the saints and the genii in their warfare are most peculiar and give a very unreal appearance to the combats and giants. Wonderful amulets, bracelets, magical pearls, and other paraphernalia of spiritual warfare are much too freely employed and tax the imagination and belief of the reader rather severely. Again the whole Taoist pantheon is brought in somewhat unnecessarily and so many gods, saints, and demons take a hand in the war that the reader is perplexed and the stage is overcrowded. The *Shahnameh*, on the other hand, makes a restrained use of the supernatural agency, though occasionally we come across an angel and, somewhat oftener, we encounter demons. The combats are therefore more realistic, though we miss the brilliant colouring to which we are accustomed in the Chinese Saga. However, we might be sure that had the *Shahnameh* been written a few centuries earlier, say in the Sassanide age, much more use would have been made of the supernatural machinery. For the Avesta and the Pahlavi accounts love to endow their heroes with supernatural powers and exploits. But Firdausi had fallen on a sceptical age and one which was particularly inclined to disbelieve the marvels described in works relating to the earlier religion and cults of Iran.

This reminds us of a remark made by a learned and careful student of epic poetry. "There is a double way of escape for young nations from their outgrown fables and mythologies. They start with enormous, monstrous, and inhuman beliefs and stories. Either they may work their way out of them, by gradual rejection of the grosser ingredients, to something more or less positive and rational; or else they may take up the myths and transmute them into poetry." (Cf. W. P. Ker, *Epic and Romance*, p. 40.) Both these processes can be traced in the *Shahnameh*; but in the case of the Chinese epic it was particularly difficult to get rid of the older mythological personages and machinery since they were deeply imbedded in the Taoistic and popular beliefs.

From the artistic point of view, the Feng-Shên-Yên-I enjoys one great advantage over the *Shahnameh*. It is a

work which has been polished and in a way edited and re-edited by numerous and nameless Taoist poets and priests. It was so far from being the work of a single hand that we do not know the name of even a reputed author. In short, the Chinese epic is the result of a long process of evolution amidst an eminently literary class of readers and hearers. Consequently the unity of the plot is well maintained, the issues of the story are made clear, the action of the poem is on the proper scale and even the accessories are heroic and magnificent. The ethical implication of each career is well brought about and the march of destiny towards a great pre-ordained event is emphasised all along. In the case of the *Shahnameh*, on the other hand, the selection from amongst the widely scattered materials and the arrangement of the selected material was the work of a single great poet. Fortunately, he was endowed with great genius—one which could at once interpret the Iranian race and its history and make a drama of his own out of it. Even so his genius was sometimes oppressed by the magnitude of the task of putting together into a comprehensive whole the *disjecta membra* of a thousand traditions which had come down from a remote past. As he himself put it :

سخنهای پراگنده بپراگند چو اگنده شد مغز جان اگند

[Scattered material oppresses the mind ; but when duly arranged it makes happy the mind and the soul.]

After these preliminary comparison of the general character of the two epics we might take up the study of the parallel features to be found among them.

KAUS AND CHOU WANG.

The Chinese epic describes the Emperor Chou Wang as weak, uxorious, and addicted to wine and women. Under the influence of bad advice such as was given to him copiously by Su-Ta-Ki—his chief female favourite and his evil genius—he could also be extremely cruel on occasions. In fact, most of his defects and shortcomings were due to his susceptibility to female influence. Thus it was under the influence of Su-Ta-Ki, that the virtuous prince Yin Kiao was persecuted and at last driven to join his father's enemies (Grube—Translation of Feng-Shen-Yen-I, 602). It was also under her influence that the famous "furnace" was instituted by the emperor for torturing those who had incurred his displeasure. As a matter of fact most of the victims who had to pass through this "fiery furnace" were the friends and champions of the prince Yin Kiao.

Now it is a very significant fact that in the *Shahnameh* the character of King Kaus is painted on exactly the same lines as that of Chou Wang in the Chinese epic—and this in

spite of the fact that there is no warrant either in the Avesta or in the Pahlavi writings for thus darkening the character of Kaus. Indeed in the Avesta (Yt. 5, 45), Kawa Usa (so far from being considered a weak tyrant given to wine and women) is specially characterised as a powerful king who exercised the highest sovereignty over all lands in the earth. So also in Yt. 19, 71 he is mentioned with high respect being "as a strong, powerful, bold king and cavalier". Even in the Pahlavi writings he is highly honoured and is at the worst described only as somewhat wayward and fond of adventure. Thus in the Dinkard (Book VIII, 12) he is distinguished as "ruler and maintainer of royalty in the seven regions". And again in the same work (Book IX, chap. 22, v. 4-13) his great glory and conquests are eloquently described. It is true, that tempted by the demon Aeshma the king ventured to fly up to heaven and consequently came to grief; but this single experience suffered and the king "thereby became discreet" (S.B.E., vol. 37, p.223).

Far different is the view of the Shahnameh as regards the character of Kai Kaus. It is obvious that there had been an accretion of later or foreign legends around his character which presented him in a very different light from that in which he is seen by Avesta and Pahlavi authorities. So strong was this new tendency to condemn Kai Kaus that Firdausi has had, from the first mention of him in the Shahnameh, to stigmatise him as a bad and weak king who could not uphold the traditions of his ancestors. This condemnatory tone has in fact been assumed in the Shahnameh from the very accession of Kai Kaus, and his character has been summed up adversely before a single incident of his reign has been recorded. Thus Firdausi tells us even at the accession of that king

اگر شاخ بد خیزد از بیخ نیک تو با بیخ نندی میاغاز نیک
گر او بفگند فرو نام پدر تو بیگانه خوانش مخوانش پسر

[If a bad branch springs from a good root you must not blame the good root. If a son disgraces a father's name and glory he is to be called a stranger rather than a son].

Such a complete change of tone towards Kai Kaus in the Iranian cycle of legends deserves to be accounted for; and the explanation can only be found in the close interrelation between the Chinese and the Iranian epics. Thus we have already seen that the Shahnameh attributes a character to Kai Kaus which is exactly the same as that of Chou Wang, but for which there is no warrant either in Avesta or Pahlavi works. But this is not all. The Shahnameh attributes to Kai Kaus many very important events of which there is no mention in Avesta or Pahlavi but which are strikingly paralleled in the history of Chou Wang. The Avesta does not mention the

persecution of prince Siawash by his father and step-mother; and it has no knowledge either of the fiery ordeal to which Kai Kaus compelled his son to submit or of the fact that the prince was at last driven to take refuge with his father's enemies. But the Feng-Shen-Yen-I and other Chinese authorities give detailed particulars of very similar incidents in the reign of Chou Wang—so much so that a great part of the story of Kai Kaus reads like an Iranicised version of the legend of Chou Wang.

How are such parallelisms to be accounted for but by the reciprocal influence of the Iranian and the Chinese cycles of legends? Avowedly the *Shahnameh* (and its predecessor the *Bastan-nameh*) were both based on ballads and traditions which had circulated in Central Asia for many centuries, and Firdausi himself says these ballads were numerous, and popular.

We might be sure that the composers and reciters of these ballads tried hard to vary and enrich them by inserting any suitable epic material on which they could lay their hands; and the developed Chinese epos must have offered great temptations to reciters of romance. It had a highly evolved moral aspect, thanks to generations of Taoist thinking and editing; it had what a reciter of romances loves particularly—a rich instrumentality of gods, genii, and demons influencing human destiny. On the other hand, both the Iranian and Chinese romance writers and poets would naturally be attracted by the material offered by the legends of the warlike tribes of the Sakas which lay geographically between Persia and China. Moreover, the legend of Prince Siawash had become a general favourite in Iran and must have received embellishments continuously from successive generations of poets and ballad-writers. Such a developed legend might in its turn have easily influenced Chinese epos. Some of the inter-connection between the legendary love of Iran and China might also be attributed to the Buddhist priesthood who held an important position in parts of both countries and who were fond of drawing on history and legend in order to illustrate their moral teaching.

SUDABEH (SU TA-KI)

If the careers and characters of the Emperors, Chou Wang and Kai Kaus, are very similarly represented in the epics so are the lives of their consorts—the two empresses Su Ta-Ki and Sudabeh. Even the resemblance in their names is striking and might not be altogether without a significance; though there is no need to emphasise that point unduly. Both epics make the empress, the evil genius of her husband, and the persecutor of virtuous princes whom they have tried in vain to seduce. Both accounts give highly poetic accounts of their methods and

powers of fascinating youths. In the Chinese epic to Su Ta-Ki is attributed the invention of the "roasting oven" for the destruction of her opponent. That corresponds to the ordeal of passing through the fire in the *Shahnameh*, and prince Siawash who resisted the charms and opposed the desires of Sudabeh was condemned to this penalty. The end of the two empresses is very similar. In the *Shahnameh*, Sudabeh is put to death by the enraged Rustam when news is received of the murder of prince Siawash. In the *Feng-Shên-Yên-I* the execution of Su Ta-Ki had to be carried out by the victorious commander Tzeyä himself, since her beauty was so great that all other officers felt her fascination and refused to carry out the sentence.

Of the two empresses the character of Su Ta-Ki is painted in the darker colours. She is not only the step-mother who attempted to lead her step-son away from the path of virtue, and failing in that attempt persecuted him to his death. These dark shades of character she shares with Sudabeh. But Su Ta-Ki had many other crimes to answer for. For one thing, she intrigued against the position and the life of the former empress—Kiang, and had her put to a cruel death in order to prepare for her own rise. In the *Shahnameh* this episode of the rivalry of Sudabeh with the other queen is omitted, but it is significant that the mother of Siawash is described as being of a more lofty lineage than Sudabeh; in fact the former is described as descended from the great King Feridun and as related to Afrasiyab and to the hero Sam at the same time. That she was made the chief queen of Iran is expressly stated in the *Shahnameh* :

بمشکوی زرین کنم شاید سر ماهرویان کنم بایدت

[You deserve that you should be taken to the golden seraglio, and to be made the chief of my beauties.]

Thus King Kaus makes her the head of his golden seraglio. But in the *Shahnameh* this mother of prince Siawash remains only a secondary figure, while in the Chinese poem the empress Kiang-Shih is one of the most dignified and tragic figures and her approaching cruel fate which was the result of the intrigues of Su Ta-Ki forms one of the most touching episodes. We notice that the *Shahnameh* does not overcharge the picture of Sudabeh's cruelty. But in the Chinese poem Su Ta-Ki is made a monster of cruelty who devises tortures for her opponents like those of "the pool of scorpions" and of the "roasting oven".

As might be expected, the temptation scene—in which the beautiful but unscrupulous step-mother tries to seduce the young prince—is well painted in both epics; and here the artistic superiority rests with the *Shahnameh*. The empress

pretends the greatest affection for her step-son and a desire to see him married to one of her own daughters; and on this pretence induces the emperor to send the prince to her palace. As the prince shows no signs of love for the young princesses the empress (Sudabeh) assumes that it is her own ripe and mature beauty which has appealed to him and which has eclipsed the girlish charms of her daughters. She then proceeds to make a passionate appeal for his love. In the Chinese version the empress (Su Ta-Ki) sends for the prince Po Yi-Kao with whom she has fallen in love on the pretence that she desires him to instruct her in playing the lute (Grube, *op. cit.*, pp. 249-254). She then tries various feminine arts of winning the love of the prince, even plying him with drink for the purpose.

It has been asserted above that in the case of the Chinese epic the plot is better laid down and woven and is more consistently developed. The end of Su Ta-Ki (Sudabeh) illustrates this remark. Both the Iranian and the Chinese epic begin by treating Su Ta-Ki and Sudabeh as the evil genius of their husbands. In both works the emperors are misled into an uxorious subservience by supernatural agency. In the Shahnameh it is the Eblis who determines to mislead King Kaus; while in the Chinese epic it is the offended goddess Nikua (or Niu-Kua) who directs the great Fox-demon to possess the soul of Su Ta-Ki in order to bring about the ruin of Chou-Wang. However, in the Shahnameh the supernatural agency is habitually minimised and is in the end forgotten; and Sudabeh's career and end are those of an ordinary dissolute and intriguing step-mother. Not so in the Feng-Shen-Yen-I. There Su Ta-Ki lives and dies as the personification of the Fox-demon. Her cruelties are of a demoniacal character and at her end she exerts her superhuman powers to escape the supreme penalty that awaited her.

SIAWASH (YIN KIAO)

In this case again the two epics are dealing with virtually the same legend. A prince is depicted who is endowed with every virtue and yet he ends his career miserably—a victim to the persecution by a dissolute queen and step-mother and to the sullen anger of a feeble and uxorious father. According to both accounts, again, the son is compelled by circumstances to join his father's enemies and, later still, he loses his life at their hands. Finally, both princes were canonised and loved by the nations to which they belonged.

One of the finest episodes in the career of prince Siawash, as given in the Shahnameh, is the account of the ordeal by fire to which he was made to submit in order to prove his innocence. Kai Kaus orders a couple of hundred men to pile

up wood, pour naphtha on it and light a mountain of fire (کوه آتش). But Siawash passes quite safely through it. The Chinese epic gives a more gruesome and realistic account of the "fiery furnace" prepared by order of King Chou-Wang. With the artistic and mechanical ingenuity for which the Chinese are distinguished a brazen column was constructed two fathoms high and eight feet in circumference. There were three openings in this hollow column for lighting fires and inserting the victim (Grube, 74). The first victim of this furnace was not, however, the prince himself (as in the *Shahnameh*) but his friend and advocate Chaoki who ventured to give advice to the emperor in favour of the prince and against the intrigues of the Empress and step-mother. The burning of the skin and muscles of Chaoki and the reduction of his bones to ashes are described realistically.

According to both epics the persecution by the step-mother at last drives the prince to seek refuge with his father's foe (Grube, 602). The *Feng-Shên-Yên-I* indeed goes somewhat further and make him bear arms for a time against his father though he gave up the design later (Grube, 655). This was an easier thing to represent in the Chinese poem, since the war between Chou-Wang and Wu-Wang was only a civil war in which it was the Chinese who fought the Chinese. In the Iranian *heldensaga* however, it was quite impossible to imagine prince Siawash fighting his father on the side of the Turanian prince; nevertheless the author of *Shahnameh* is fully aware that the Turanian enemy gained important advantage by the arrival of Siawash in Turan:

بخارا و سند و سرقند و چاغ سپنجاپ وان کشور و تخت عاج
تهی کرد و شد با سپه سوی گنگ بهانه نجست و فریب و درنگ

[The prince evacuated Bukhara, Sind and Samargand and Chay as well as Sipanjab and went away to Gang without seeking for any delay or excuse].

While in the Chinese epic the emperor sends generals to pursue his son; in the *Shahnameh* the father disgraces his son and sends the warrior Tus to relieve the prince of his command:

سپه طوس راده تو خود باز گرد نه مرد پر خاش و جنگ و نبرد

[Resign your command to Tus and return, for you are no soldier].

In the description of the end of the prince Siawash (Yin Kiao) both epics show some resemblances which are worth noting. In both the prince is beheaded in a ghastly fashion by his father's enemies. In the *Shahnameh*, Cersiwaz (Keresawazda) the brother of the Turanian king suggests to the latter

that though the Persian prince has taken refuge in Turan he is still working in the interests of his father. The prince is therefore beheaded; and, it is added, that after he was beheaded a certain variety of vegetation sprang up on the ground on which his blood had been shed. In the Chinese epic, too, the prince (Yin Kiao) met with his death on account of his loyalty to his father. Though at first he joins the party adverse to his father at the behest of a Taoist saint, he soon repents, and takes part in the way—on the side of his father. He is captured later by his father's enemies and is buried in the ground so as to leave only his head on the surface. In this position a plough was driven over his head by a peasant and the prince was killed (Grube, 604). Thus just as in the *Shahnameh*, the blood of the prince served to help the growth of vegetation.

In both epics, again, the spirit of the murdered prince is recognized as a powerful agent in giving warnings through dreams. In the *Shahnameh* the spirit of prince Siawash appears in a dream to the Persian commander Tus to encourage him to persevere in the war against Turanians. His spirit also appeared to the hero Guderz in order to induce the latter to undertake a search for Kai Khusrau who was to avenge the murder on Afrasiyab. Similarly, in the *Feng-Shen-Yen-I*, the spirit of the murdered prince appeared to his father (the emperor Chou-Wang) and warned him against evil ways which were leading him to ruin and defeat.

The ethical implications of the story of the prince Siawash (Yin Kiao) are better brought out in the Chinese than in the Iranian epic—as was only to be expected owing to the Taoist influence on the former. In the *Shahnameh* the story is a mere tragedy; the prince who is ever loyal to his father is persecuted by his step-mother, and is driven to Turan. The king of Turan receives him well at first but later he suspects him of being too loyal to his father, and has him executed cruelly. In the Chinese epic, too, the prince (Yin Kiao) perishes on account of his overzealous sense of duty to his father. But the ethical implication is more complicated, and points of casuistry arise. In fact, there was a conflict of duties in the case of the prince. On the one hand, it was his duty to assist his father; but on the other hand, it was also his duty to avenge his mother who had been murdered by the order of that father and the step-mother. This latter duty was reinforced by the command of his Taoist preceptor who ordered him to take sides against his father (Grube, 602). In the end, however, Yin Kiao allowed himself to be persuaded to go to his father's assistance and this disobedience to the commands of his Taoist preceptor involved the supreme penalty of death. Evidently, according to the Chinese epic, his duty to his deceased mother as well as to his preceptor outweighed his duty to an unworthy

father. For in the Taoist system the duty of obedience to the spiritual preceptor outweighs all other duties. As the Taoist poem puts it; "I am afraid of my master, though I am not afraid of the Heavens" (Grube, 434).

SOHRAB (NO-CHA)

A great portion of the *Shahnameh*—indeed much of the essentially epic portion of that poem—is occupied by the exploits of the Saka heroes—Kerešaspa, Rustam and Sohrab. Almost all the exploits attributed to these heroes in the Iranian epic are ascribed in the Chinese accounts to the three heroes—the Divine Archer Yi, Li Tsing and the latter's son No-Cha. But while in the *Shahnameh* the lion's share of the exploit goes to Rustam, in the Chinese legends the Divine Archer and No-Cha share most of the honours. Indeed, in the *Feng-Shên-Yên-I*, it is No-Cha who has the leading place among the three heroes. To him is attributed the exploit of killing the dragon-king of the waters an exploit which corresponds to the conquest of Gandarewa by Kerešaspa. Again the *Feng-Shên-Yên-I* attributes to No-Cha the conquest of the seven demons of Mei-Shan (Grube, 623-4) which corresponds to the seven labours of Rustam in Mazendaran (the famous "Haft-Khwan"). In fact No-Cha occupies a far larger space in the Chinese epic than Sohrab does in the Iranian account. The main reason for this is that while in both epics Sohrab (No-Cha) dies young, the Taoist saints of *Feng-Shên-Yên-I* have both the power and the will to revive the dead. In both epics, however, one of the most dramatic episodes is occupied with the fight between Sohrab (No-Cha) and his father Rustam (Li Tsing).

Naturally both epics make the most of the combat between such a father and such a son—and what is more to our purpose, quite a number of resemblances between the two narratives are noticeable. Thus the *Feng-Shên-Yên-I* remarks that No-Cha defeated and pursued his father thrice, ere he recognised him (Grube, 435). This reminds us that in the *Shahnameh* Rustam saves himself by persuading his opponent that a hero should be defeated several times ere he can be slain :—

کسی کو بکشتی نبرد آورد	سر مهنری زیر گرد آورد
نخستین که پشتش نهد بر زمین	نبرد سرش گرچه باشد بکین
اگر بار دیگرش زیر آورد	بافکندنش نام شیر آورد
روا باشد او سر کند ز جدا	بدین گونه بر باشد آئین ما

[Our rule is as regards wrestling that the defeated party is not to be killed on the occasion of the first defeat in the ring].

It was by such a stratagem that Rustam twice avoided

death at the hand of his son. Twice according to the Persian account it was in the power of the son to kill the father and win the victory but the former generously forbore to make full use of his success :—

دوباره امان دادم از کارزار بپذیریت بخشیدم ای نامدار

[Twice I have given you quarter and have had pity on your old age].

Both poems thus describe three encounters between father and son.

Both poems again represent the father as resorting to spiritual agency in order to escape destruction. In the *Shahnameh* Rustam resorts to prayers in order to gain more strength for the final encounter. In the Chinese version Li Tsing (the father) takes refuge behind a Taoist saint who increases the old hero's strength by touching him on the back and spitting on him—a Taoist method of imparting strength (Grube, 193-5). It was then that the older hero got the upper hand and No-Cha was compelled to acknowledge him as his father and bow to him in humiliation (Grube, 194).

It might be noted also that in the *Shahnameh* Sohrab (like No-Cha in the Chinese poem) shows from his first appearance to his end a bitter hatred of King Kai-Kaus. From his earliest youth he declares war on him and tries his best to overthrow him. Indeed he proposes openly to bring his father over to his side with the object of overthrowing Kai-Kaus :—

ببرم هم از گاه کاوس را از ایران ببرم پی طوس را

[I shall uproot King Kai-Kaus from the throne of Persia and shall also cut off the general Tus].

The best commentary on this attitude of Sohrab towards Kai-Kaus is the Chinese epic where No-Cha is one of the most bitter and consistent enemies of Chou-Wang. Indeed No-Cha had been revived by the Taoist saint and reconciled to his father in order that he might help in the overthrow of Chou-Wang (Grube, 194). The aspirations of Sohrab to overthrow his sovereign corresponded exactly with the performance of No-Cha.

In the epic of Firdausi the episode of Sohrab is an unrelieved tragedy. The greatest and most promising hero of the legends of Sakastan and of the house of Rustam dies at an early age without redeeming the promise of his boyhood, having lived only long enough to identify and acknowledge his father. His sorrowing mother pines away in sorrow and loneliness. But things are managed quite differently in the *Feng-Shen-Yen-I*; for there the priestly authors have the gift of bringing the dead back to life. That نوشدارو (ambrosia) for which Rustam craved in vain, in order to bring back the young hero to life is

easily at the disposal of the Taoist saints who are met with so often in the Chinese epic. No-Cha (Sohrab) is brought back to life by his Taoist master ; and, indeed, in the Chinese epic it is in this second phase of his existence that the hero's most important exploits are performed (Grube, 182-186) and in which he carried on his immortal fight with his father. For his master who worked his revivification supplied him with quite a number of miraculous weapons ; and these insured his success in numerous other battles. It is to be noted that the very idea of the Shahnameh of the search of Ambrosia for the mortally wounded Sohrab implies the existence of another version of the story in which he is brought back from the dead. For in the case of no other hero of the Persian epic is there any such search after he is wounded to death. It is also noteworthy that while in the Shahnameh the glory of the "Haft-Khwan" or the accomplishment of seven great labours in Mazendaran is given to the father, in the Chinese story a similar great feat is ascribed to the son. For according to the Persian poem it was the father who conquered the seven demons and wild beasts of Mazendaran while the Chinese account makes the son (No-Cha) overcome the seven demons of Mei-Shan (Grube, 623).

In the Shahnameh we are told that at the birth of Sohrab (No-Cha) his father presented him with a jewel to be worn as a bracelet. According to this account the object of the bracelet was to serve as a recognition of the paternity of Sohrab. In the Chinese epic, too, No-Cha wears a bracelet which, however, was in itself a powerful weapon. No-Cha was born with this arm-ring and with that weapon he slew dragon-warriors (Grube, 162) and many other enemies. Miraculous weapons were not much in the line of the Persian epic, which was addressed to a people less imaginative than the Chinese. One can therefore well imagine why the miraculous bracelet which served as a formidable weapon in the Chinese poem was relegated to an ornamental and secondary purpose in the Persian epic.

Dealing with the episode of Sohrab, the Shahnameh recounts the exploits of a heroine named Gurdafarid. She was the daughter of Hajir—the commandant of a border fortress of Iran. Her father having been taken prisoner she herself took the field against Sohrab and his allies, and performed great deeds of arms. It was not until she had abandoned the fortress that it was taken by Sohrab, who had meanwhile fallen in love with her.

This episode is found also in the Fêng-Shên-Yên-I in its entirety. The heroine whose Chinese name was Teng Chan-Yu was the daughter of the warrior Teng-Kin-Kung who commanded the fort San-Shan-Kuan. Her father being incapacitated by a wound in the shoulder, she herself took the field against

Tzeyya, No-Cha and their allies and put to rout three of their chief heroes—Tzeyya, Huang Tien-Hua, and Lung-Su-Hie. No-Cha vastly enjoyed this defeat of his friends by a mere girl (Grube, 594). In the end the fortress was taken by treachery and it required the combined efforts of No-Cha and a whole squadron of warriors to secure the person of the war-like maid. The whole episode is the same both in the *Shahnameh* and in the *Feng-Shen-Yen-I*, except the one important detail that the maid escapes capture in the Iranian account.

THE SIMURGH (THE BIRD "RUKH")

We might now consider the famous "Simurgh" of the *Shahnameh*—that wonderful bird which helps and rescues the hero Rustam (who corresponds to Li-Tsing in the Chinese epic) so often in his wars. In fact Rustam would have been vanquished and slain by the young hero Isfendiar, but for the help of this marvellous bird. The Chinese epic furnishes us with a very similar account of the bird "Rukh" and also in connection with Li-Tsing. In the shape of the saint Jan-teng tao-jen this miraculous bird helps Li-Tsing against a younger hero and saves the former's life. Only in the Chinese epic it is against No-Cha (Sohrab) that the bird protects the hero. Thus the mysterious bird has a double nature in the Chinese account—it is both a bird and a saint. This well illustrates what I have said in my paper on Bahram Yasht read before the Asiatic Society of Bengal about the etymology of the word "Simurgh."

In the Chinese accounts the bird Sien-Ho, the crane, gets its name from its association with the "Sien" or hermits with which it is associated. The name "Simurgh" (in Avesta "Mereg-Sin") is formed by analogy—as a marvellous bird associated with one of the hermits or "Sien." This association is well illustrated by the case of the bird "Rukh" in the *Feng-Shen-Yen-I*, which sometimes appears as a bird and sometimes as the hermit Jan-teng tao-jen. In the Chinese poem the bird sometimes fights on its own account against warlike and powerful magicians (Grube, 566 and 607) though by the side of Jan-teng.

POLĀDWAND (THE MAGICIANS OF PO-LU-TAO)

As the great struggle described in the two epics drew near its crisis new and more terrible devices were resorted to by the combatants. In the Chinese epic the party which was approaching defeat summoned to its assistance super-magicians from Po-lu-tao ("the island of the white hart") and other remote places. Great battling magicians they were who for a time restored the fortunes of the party by which they were summoned; for in Po-lu-tao the friends of the party of Chou-

Wang found and practised new arts of war which were forbidden by the code of Taoism (Grube, 550-553). So also, in the *Shahnameh*, Afrasiyab who had tried in vain to conquer Iran with his army resorted at last to the help of the demon Poladwand. Let us see how the Iranian poem describes this reinforcement:

چو مردم نماند ازمودیم دیو چنین جنگ و پیکار و چندین غریب
و دیگر که این دیو ناسازگار به تن سهمناک است و چیره سوار

[Since our men were exhausted we have to resort to demons of a battling and roaring nature. This evil demon has a fearful form and is a great cavalier].

It is further to be noted, as a very significant feature that Poladwand is summoned to the Persian war from his home in the mountains of China.

دران کوه چین اندرون جای اوی نبود اندران بوم همتای اوی

[His abode was in the mountains of China and in that country he had no rival.]

The summoning of the demon from the Chinese mountains to attack Iran reminds us of the Chinese hermits residing on mountains like Kun-Lun—the abode of Taoist genii (Grube, 554) or Mt. Kiu-sien-shan (Grube, 119). Indeed the *Feng-Shên-Yên-I* introduces us to numerous such genii and hermits who descend into battle from their headquarters in inaccessible mountains. While therefore the *Shahnameh* introduces us to only one such demon or spirit coming from the Chinese mountain the *Feng-Shên-Yên-I* furnishes us with accounts of numerous similar supernatural beings from mountains and islands. In particular, there are the ten "battle magicians" from the island of Kin-ao-tao (Grube, 549-et seq).

With the advent of these magical forces on both sides the war developed into a titanic struggle and in dealing with it the *Feng-Shên-Yên-I* rises to new heights of sublimity. The flood of unholy magic and rites at first bore all before it. Even the most eminent warriors like No-Cha (Sohrab) went down before it (Grube, 547 and 595); and the great organizer and general of the good cause—Tzeya—had to be "relieved" of his command, which had to be conferred on a super-magician like Jan-teng (Grube, 566). A series of wonderful magical exploits are performed and the highest and most delicate supernatural machinery is utilised on either sides.

In the *Shahnameh* to the fight between Rustam and Poladwand is described in fine poetic style; but there was unfortunately much less scope than in the Chinese version for sublimity and ingenuity. The hard-headed Persians could not be expected to appreciate the highly subtle and miraculous

weapons which would appeal to the readers of the Chinese poem. To the practical Persian race the final arbitrament of all combats—whether between mortals and demons—seemed to lie with the heavy mace. Consequently, Poladwand though reputed to be a demon has to take on Rustam with the ordinary weapons of ancient warfare—the sword and the mace. When Rustam could not kill the demon with mace or sword he seized the latter and dashed him on the ground with such force that all his bones were nearly broken. In fact, the treatment of the episode of Poladwand in the Shahnameh disappoints the expectations aroused in us as regards the warfare of demons; for the demon fails to exhibit any novel or special methods of fighting. The position taken up in the Chinese epic is certainly the more logical. Demons and magicians—supposing them to exist—cannot be got rid of by the commonplace methods of knocking them on the head with a mace or dashing them to the ground by a trick of wrestling.

Special attention has to be drawn to the fact that the Shahnameh shows a sequence or “block” of no less than three Chinese episodes—the stories of the Khaqan-i-Chin, of Poladwand and of Akwan Diw. This last demon, I hope, I have already elsewhere satisfactorily identified with Fei-Lien. In fact, when reading these episodes in the Iranian epic we are actually in the land of Feng-Shen-Yen-I; and in the adventures of Poladwand and Akwan we are certainly watching the reflections or shadows of the Titanic war of magicians narrated in the Chinese epic. Firdausi’s description of Akwan—with his stag’s body, leopard’s colour and snake’s tail fully corresponds to Chinese accounts of Fei-Lien. But above all in the methods of warfare exhibited by Akwan Diw we can trace much similarity to the methods of magical warfare usual in the Feng-Shen-Yen-I. Akwan Diw avoids the blows of even Rustam’s sword and mace by changing himself into a blast of wind; and he flies away into the sky carrying Rustam with himself. Even apart from all this Fei-Lien possesses unique interest and importance for the comparative study of the Shahnameh and the Feng-Shen-Yen-I. For in both epics he appears as a supporter of the defeated side, though in the Chinese epic Fei-Lien shows a treacherous character and would go over at the end of the struggle to the victorious side.

“THE COMBAT OF THE ELEVEN” (جنگ یازده رخ)

As the epic struggle is about to terminate it is very interesting to find that both in the Chinese and the Persian poem the same method is adopted of annihilating the defeated party. In both poems it is found impossible to get rid of the masses of great combatants arrayed against each other by the slow process of single combats. An *impasse* was obviously

reached in both cases and some extraordinary contrivance was required to clear the field of the superfluous masses of warriors and demons. A great combat is therefore arranged in both epics of eleven champions of the one side against eleven of the other party. The important business is arranged with the greatest ceremony. In the *Shahnameh* the commanders of the two sides (Guderz and Pirān) have long *pourparlers* in which they devise these series of glorified combats and make arrangements for their proper procedure. So also in the *Feng-Shên-Yên-I*, the commander of one side (Tai-Shih Wen) sends a formal challenge to the opposite general (Tzeyā). The challenge was to the effect that Tai-Shih Wen with his ten battling magicians was ready to fight Tzeyā and his champions in order to end the war (Grube, 567). The challenge was accepted by Tzeyā and the two parties of warriors met in mortal combat. In both epics each side is assigned a hill as headquarters from which it descends into the combat.

Here again the treatment of the combat of "eleven against eleven" is less sublime in the *Shahnameh* than in the *Feng-Shên-Yên-I*; and that because of the obvious partiality of Firdausi to one of the sides. He takes care that not a single Iranian champion is killed or defeated in the series of eleven combats. This poetic injustice greatly diminishes the interest of the narrative.

Very differently is the business managed in the Chinese epic. Here there is no plain sailing even for the victorious party. The fears of their leader Jan-teng are very real and well founded. Not in vain does he sigh and observe that "in this age my ten companions will surely receive injuries" (Grube, 566). These fears were fully justified; for in the very first combat he lost Ten Hua, one of his best helpers (Grube, 567). It was only after many days' hard fighting and various losses that the party of Tzeyā won the day; and their leader had to fly from the field to seek help from the immortal Chao-Kung-ming (Grube, 581). It must, however, be admitted that in the Chinese poem the idea of a combat of eleven champions is sometimes departed from as an occasional outsider mingles in the fray. It remains also to emphasise that in both epics the war is virtually ended with this combat of eleven champions." In the *Shahnameh*, after "the combat of the eleven" King Afrasiyab is a fugitive. Gone are his old assistants and warriors; gone, too, is his faithful minister Pirān Wiseh—a good servant of a bad master whose character reminds us forcibly of that of Tai-Shih Wen who served the tyrant Chou-Wang so faithfully and so fruitlessly. The personal challenges which Afrasiyab and his son Shedah deliver later on to their foes, show too plainly that their army has been exhausted.

And finally what happens to Afrasiyab when he has lost his crown and his army? He who had been the grand organiser

of the war, he who had sent into the fight one after another Pirān Wisēh and Poladwand and the "eleven champions", and who had backed up prince Siawash against his father was at last driven to conceal himself finally in the lake Chai-Chasta. The *Shahnameh* calls his refuge the "Hang-i-Afrasiyab" a word borrowed from the Avesta term "Hankan". Strangely enough the fate of the grand organizer of the struggle in the Feng-Shen-Yen-I was just the same. It was Shen-Kung-Pao who had sent forward one hero after another to espouse the party which was defeated in the end. He it was who had sent into the war those who fought "the combat of the eleven" as well as warriors like Ma-Yuan and Lo-Suan and who had made prince Yin-Kiao take up arms against his father. It was also his fate to be imprisoned in a well or lake in the North Sea (Grube, 617).

Thus there is abundant proof of striking and unexpected resemblance between quite a number of episodes in the *Shahnameh* and the Feng-Shen-Yen-I. But what is even more significant is that the resemblances and parallelisms are not spread indiscriminately over the whole range of the works but are confined mainly to the legends relating to a small and clearly defined group of epic personalities. This observation will be of great use to us in tracing the source of the resemblances which we have noted. For, obviously, if the resemblances were due to a casual interchange of legends and ideas they would be spread evenly over the range of the works. As a matter of fact, however, the resemblances are concentrated in the main in the legends relating to a narrow circle of personalities. A mere enumeration of these personages will show that (according to the *Shahnameh*) they are all related to the Saka race and history. The parallelisms have been shown to be very closing in the matter of the stories relating to Sohrab (No-Cha) and Rustam (Li-Tsing) as well as those about the bird "Rukh" (Simurgh); and there is little need to remind the student of the *Shahnameh* that these personalities form the very centre of the cycle of Sakastan legends. There are also Sodabeh (Su-Ta-Ki), her husband King Kaus (Chou-Sin or Chou-Wang) and her step-son Siawash (Yin-Kiao). These are also related to the Saka cycle of stories since Sudabeh is the daughter of the prince of Hamawaran who was a Saka chief as is shown by Firdausi. Here is the main proof of the obligations both of the Chinese and the Iranian epic to the Saka legends. These legends of a warlike and romantic race like the Sakas would have a strong attraction for both the producers and hearers of the ballads sung in Central Asia and Eastern Iran. In fact there are certain races whose romantic legends and poems have general appeal for their neighbours. Thus even to-day India borrows most of the provincial history of Rajputna which is largely peopled by the descendants of the

same Sakas. But there was another motive which necessitated borrowings both on the part of China and Iran. The desire of the Iranian population for accounts of their old royalty was only equalled by the poverty of the annals regarding events and incidents. For the Avesta and the Pahlavi writings contain only occasional references to historical events. China had perhaps a little larger amount of authentic history. But, even so, and giving all credit to Sze-ma Tsien for his admirable work we cannot see very much material for the epic and the romance. The ballad-makers both of Iran and China were thus under the necessity of helping themselves to the material so abundantly offered by the Sakas.

While thus in all probability both the Iranian and the Chinese epic incorporated legends of the Sakas, we can see that in the *Shahnameh* they have been in a way kept apart while they have been more closely incorporated in the *Feng-Shên-Yên-I*. In the latter poem the exploits of heroes like Li-Tsing and No-Cha (borrowed from the Saka cycle) are spread over the whole range of the poem and do not occupy any particular portion or portions of the epic by themselves. In the *Shahnameh*, however, there is noticeable a distinct tendency to keep apart the material drawn from Saka sources. Indeed when carefully examined, the *Shahnameh* shows alternate strata of purely Iranian and Sakaean material. This observation might be illustrated by a few examples. Thus the wars of Rustam in Mazendaran and his combat with Sohrab form the first stratum of almost purely Saka legend. After that the *Shahnameh* goes on with the career of Siawash and the rise of Kai Khusrau to royalty in which Rustam plays but a secondary part, and which might be therefore termed a purely Iranian stratum or portion. This is followed by another purely Iranian chapter—*viz*: the one dealing with wars of the heroes Guderz and Tus and their family with Pirân-Wisa and his Turanian. Then succeeds another purely Sakaean chapter which narrates the successes of Rustam against the Kushans, the Chinese (under their Khagan) and the Indians (represented by Shangal). After this Firdausi resumes the wars of the families of Guderz and Pirân and we hear little of Rustam. Even in the final episode of the ruin and death of Afrasiyab, Rustam, curiously enough, plays no part and thus this great chapter remains purely Iranian. Indeed after his Chinese Kushan and Indian exploits, Rustam and his Sakas disappear from our view until he is brought in again as the hero of two Saka ballads of which the first recounted his fight with Isfendiâr and the other describes his end.

Let us now summarise the conclusions reached in this paper. Our comparison of the *Shahnameh* and the *Feng-Shên-Yên-I* has been carried out on two lines. We have compared, on the one hand, individual legends with the object of identification. We have also traced the parallel character of the

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general lines of evolution of the two epics. The main results of our studies can now be presented.


(1) We have found remarkable parallelism both general and detailed between the legends of Chou-Wang and Kai-Kaus, Su-Ta-Ki and Sudabeh, Yin Kiao and Siawash, Sohrab and No-Cha, the bird "Rukh" and (Simurgh). But there is something more to notice than the mere parallelisms however exact: for in some cases we can even see how that parallelism was brought about. It is obvious, for example, that the character of King Kaus in the Shahnameh has been much altered from what it was in the Avesta. In this instance we can actually trace the influence of the Chinese epos upon Persian legend.

(2) Particular attention is also invited to the fact that in the Shahnameh there are two compact blocks of the "Chinese" episodes. The first and earlier block consists of the legends about the seven labours of Rustam (the "Haft Khwan"). If the episodes of Sohrab, Sudabeh and Siawash have Chinese counterparts, so also corresponding to the seven demons and difficulties which Rustam encountered in the "Haft Khwan" are the seven demons of Mei-Shan who were overcome by No-Cha (Sohrab) in the Chinese poem. The second or later block of "Chinese" episodes in the Shahnameh consists of the legends of Khaquan-I-Chin, Poladwand and Akwan. According to Firdausi all these came from China and I have identified the second with the battling magicians of Po-lu tao and the third with Fei-Lien. The formation of two such extensive blocks of legends, and the references in Shahnameh to the Chinese origin of the demons concerned would by themselves be significant proofs of the influence of the Chinese epos on Iranian legends. On the other hand, and in earlier ages, Iranian mythology might well have influenced Chinese legends. But in the later ages one can gather that the influence of matured and important Chinese epics like the Feng-Shen-Yen-I upon the Persian Saga would be important.

(3) Quite apart from these individual and common legends we come to the fact of the parallel development of the general schemes of the two epics. We start with the fact that both epics have as their scheme a great combat between the forces of good and evil, as is indeed avowed by the Chinese poem. After a time when the combat deepens, the losing side in both epics draws upon the help of demoniac beings like Poladwand (the battling magicians of Po-lu-tao) and Akwan (Fei-Lien). Soon in both poems the problem of an epic *impasse* arises *viz.* how to get rid of the vast number of combatants on each side. Both poems solve it in the same and very characteristic way—the combat of eleven champions on each side. It is remarkable that no other of the world's epics uses this way bringing about the *denouement*. Needless to say that the eleven heroes of the good side prevail. But

even so the end is not yet; for the heroes of the good side too remain to be disposed of. Consequently in the Shahnameh King Kai-Khusru the leader of the good side is made to ascend to heaven without tasting of the bitterness of death, and most of his paladins die on mountains in trying to follow his example. Obviously the Shahnameh follows a later type of the old legend of Iran, and in the earlier form the paladins also ascended to heaven; for in the Pahlavi writings Tus and Giw among these paladins are also regarded as immortals. Similarly in the Fêng-Shên-Yên-I seven leaders of the good side like No-Cha (Sohrab), and his father Li-Tsing (Rustam) go back to the mountains to complete their ascetic practices. Thus both epics terminate alike—the best heroes of each ascending the mountains to fulfil mystic aspirations.

It is to be hoped that these articles might induce some eminent Sinologists and Avesta scholars to develop the topic of Sino-Iranian legends and to bring out its great potentialities. Besides the Fêng-Shên-Yên-I the Chinese literature possesses a great wealth of legendary literature. A profound study of that literature side by side with the Shahnameh as well as the Avesta and Pahlavi texts will help us to write adequately a great and new chapter in the history of the world's mythology and legends.



Brahmanism and Lawful Food.

By M. M. CHATTERJI.

At the outset, the method of interpreting Brahmanical Scriptures adopted by recognised exegetists may be shortly summarised. In the first place, they accept the authority of the scriptures in that they are super-rational (अपूर्व) but not opposed to reason. The truth or reality indicated by scriptural words are not within the range of perceptive and logical faculties. The truth indicated by the words is proved by the existence of the words themselves. The words are the only link between individuals, possessed of the five senses and the logical faculties of deduction and induction, and the truth indicated as the meaning of the words, which are not mere meaningless sounds. It is obvious that no possible motive can be imagined to exist in one possessed of perceptive and logical faculties to create a link with what is imperceptible and unthinkable, especially when that to be linked with, is of no individual benefit within the range of sense and mind. The above statements are intended to be a modernised summary of Sabara Svami's commentary on the ritualist Vedic teachings (Pūrva Mimāṃsā) so far as it relates to the acceptance of the Scriptures as an organon of truth. The scriptures derive their authority from the super-rational character of their declarations with which reason can be harmonised so as to secure the supreme well-being of rational beings (परमार्थ).

This search for harmony is known as knowledge (ज्ञान). The process of harmonisation is not confined to reason alone but embraces emotion (भक्ति) and action (कर्म). Sectarian differences arise from emphasis laid upon one of the three faculties or qualities and are embittered by denial and dishonour of those not emphasised. For an all-absorbing search for harmony between reason and unloved, unvalued super-rational being *per se* is inconceivable. An all-forgetting loving search of the wholly unknown is equally inconceivable. And so is canonical action without interest and intelligence. It may not be useless to change the phraseology so as to prevent the obscuration of thought by words ज्ञान is faith, "the evidence of things unseen" which "comes from hearing" (*Ep. Rom.*—X-17). भक्ति is charity or love and कर्म is works.

In the ten *mahā* or great Upanisads, which form the Vedic foundation of Brahmanism the emphasis is laid on ज्ञान but harmony with भक्ति and कर्म is not wanting. For instance in

Taittiriya Upaniṣad the supreme is declared to be joy in itself, the quintessence of love or भक्ति.¹

In Isopaniṣad harmony with works is declared.² But the subject can in no sense, be completed without a reference to Sankarāchārya, who is universally taken in Brahmandom as the archetype of all Adualist (अद्वैत) teachers concerning the Supreme as Being *per se* (*Sat*). Obviously from Being *per se* form, attribute, action and even conception cannot be conceived as separate and only negative expressions will be reasonably allowed such as निर्गुण (attributeless), निराकार (formless), निष्क्रिय (actionless), अनिर्वचनीय (ineffable), अज्ञेय (unknowable) and so forth. According to him, as is well known, the supreme end of existence is मोक्ष or liberation from relative or conditioned existence which makes the self indistinguishable from Being *per se* but not extinction which would make liberation while in the body साक्षात्सुक्ति impossible. Besides extinction cannot be a

१ यतो वाचो निवर्तते । अप्राप्य मनसा सह ।

आनन्दं ब्रह्मणो विद्वान् । न विभेति कुतश्चेति ।

एतं ह वाच न तपति । किमहं साधुनाकरवम् ।

किमहं पापमकरवमिति । स य एवं विद्वानेते आत्मानं स्पृणुते ।

उभे द्वे वैष एते आत्मानं स्पृणुते । य एवं वेद ।

इत्युपनिषत् ।

He who knows the bliss of that Brahman, from whence all speech, with the mind, turns away unable to reach it, he fears nothing.

He does not distress himself with the thought, Why did I not do what is good? Why did I do what is bad? He who thus knows these two (good and bad), frees himself. He who knows both, frees himself. This is the Upaniṣad.

S.B.E., Vol. XV, p. 63.

२ ईशावास्यमिदं सर्वं यत् किञ्च जगत्यां जगत् ।

तेन त्यक्तेन भुञ्जीथा मा गृधः कस्यस्वित् धनं ॥ १ ॥

कुर्वन्नेवेह कर्माणि जिजीविषेच्छतं समाः ।

एवं त्वयि नान्यथेतोऽस्ति न कर्म लिप्यते नरे ॥ २ ॥

1st. All the material extension in this world, whatsoever it may be, should be considered as clothed with the existence of the Supreme regulating spirit: by thus abstracting thy mind from worldly thoughts, preserve thyself from self-sufficiency, and entertain not a covetous regard for property belonging to any individual.

2nd. Let man desire to live a whole century, practising, in this world, during that time, religious rites, because for such A SELFISH MIND IS THINE, besides the observance of these rites, there is no other mode the practice of which would not subject thee to evils.

(Raja Ram Mohan Roy.)

desired object¹. Of *Bhakti*, he says—Of all means for the attainment of liberation *bhakti* alone is of the highest value.² *Bhakti* :—thus is termed the search for the true or essential nature of one's ownself.

The resume “Brihadaranyaka” and “Chhandogya” Upaniṣads are prolific mothers of *pratika*³ *upasana* or sacred science based on symbols. The *pratika* is an objective reality of value in practical life. It is taken dissociated from time, place, individuality and action so as to represent an aspect of the transcendent Supreme and then by gradation is connected with general and individual life of practice. Examples will presently be seen in connection with the Bhagavad Gita which completes the canonical scriptures of the three-fold path (*prasthana trayam*). The harmonious combination of faith, love and works is fully and popularly exhibited in the Bhagavad Gita :—

“Two paths of devotion for the world were declared by Me in the beginning, O sinless one, devotion as wisdom of the spiritually wise, and devotion as action of the men of action”.⁴

Proceeding it shows that faith and action are not mutually exclusive but according to individual temperament one is more accentuated than the other. For as is shown, the physical body, which faith itself needs for its development, cannot be maintained without action or works :—

“Perform thou proper action; action is superior to inaction. By inaction even thy bodily voyage cannot be accomplished.”⁵

In this connection the example is cited of Janaka who, living in royal splendour, reached the supreme end :—

“Verily through action Janaka and others attained the goal.

¹ See his commentary in “Brahma Sūtram” *passim* specially on Adhyay IV, Pāda 4.

² मोक्षसाधनसामग्र्यां भक्तिरेव गरीयसी ।

ख स्वरूपानुसन्धानं भक्तिरित्यभिधीयते ॥

विवेकचूडामणि ॥ ३२ ॥

³ Literary meaning “what makes known” as sign or symbol.

⁴ लोकोक्तिं द्विविधां निष्ठां पुरा प्रोक्तां मयानघ ।

ज्ञानयोगेन सांख्यानं कर्मयोगेन योगिनाम् ॥

(Bhagavad Gita, III, 3)

⁵ नियतं कुरु कर्म त्वं कर्म ज्यायो ह्यकर्मणः ।

शरीर यात्रापि च ते न प्रसिद्ध्यदकर्मणः ॥

(Bhagavad Gita, III, 8)

And even seeing the need of keeping men fixed to duty, thou oughtest to perform thy duties."¹

The related teaching is wound up as follows :—

"Fools say, and not the wise, that renunciation and right performance of action are different. He who practises one perfectly, receives the fruit of both."²

Similar combination between faith and love is lucidly declared:—

"Four classes of men, workers of righteousness, worship Me, O Arjuna,—the afflicted, the searchers for Truth, the desirers of possessions, and the wise, O son of Bharata."³

Finally, the condition of the devotee who neglects love is described as a warning :—

"Greater is the difficulty for those whose hearts are fixed on the unmanifest. Verily, firm devotion to the unmanifest is obtained with great suffering by embodied creatures."⁴

It is not very difficult to trace in the Bhagavad Gita the method of applying spiritual doctrines to practical conduct. It would be useful to consider character, the root of conduct, before touching on the subject of food which is only a branch. A knowledge of the formulæ must precede their application to given problems.

The character of the devotee whose heart in all-absorbing love, rests in the Supreme, revealed by faith, is thus described :—

"Hating no creature, full of brotherly love, and compassionate, devoid of my-ness, devoid of egotism, equal towards suffering and enjoyment, forgiving."⁵

¹ कर्मणैव हि संसिद्धिमास्थिता जनकादयः ।

लोकसंग्रहमेवापि संपश्यन् कर्तुमर्हसि ॥

(Bhagavad Gita, III, 20)

² सांख्ययोगो प्रथग्वालाः प्रवदन्ति न पण्डिताः ।

एकमयास्थितः सम्यग्भयोर्विन्दते फलम् ॥

(Bhagavad Gita, V, 4)

³ चतुर्विधा भजन्ते मां जना सुहृत्पुत्रोऽर्जुन ।

आर्त्ता जिज्ञासुरर्थार्थी ज्ञानी च भरतर्षभ ॥

(Bhagavad Gita, VII, 16)

⁴ क्लेशोऽधिकतरस्तेषामव्यक्तासक्तचेतसाम् ।

अव्यक्ता हि गतिर्दुःखं देहवद्विरवाप्यते ॥

(Bhagavad Gita, XII, 5)

⁵ अद्वेष्टा सर्वभूतानां मैत्रः करुण एव च ।

निर्ममो निरद्वेषः समदुःखसुखः क्षमी ॥

(Bhagavad Gita, XII, 13)

"Ever content, of tranquil heart, with nature subjugated, firm in intent, and with thought and faith given up to Me: whoso is my devotee is dear unto Me."¹

"He from whom no one feels perturbation, also whom no one perturbs, who is free from the agitation arising from exultation, despondency, and fear, is beloved of Me."²

"Unexpected, pure, capable, neutral, devoid of fear, giving up initiation of action, whoso is my devotee is beloved of Me."³

"He who does not feel exultant, nor hates, nor mourns, nor longs, giving up good as well as evil, whoso is possessed of devotion is beloved of Me."⁴

"Equal towards friend and enemy and also toward honor and disgrace, equal towards heat and cold, towards enjoyment and suffering, and devoid of attachment."⁵

"Equal to whom are abuse and adulation, silent, content with any and everything, without fixed habitation, firm in heart, possessed of devotion,—such a man is beloved of Me."⁶

"Those who worship this immortality-bearing law as declared, full of faith, regarding Me as the supreme end, and devoted—are excessively beloved of Me."⁷

The form of teaching differs when love is emphasized:—

"Even if the most evil-conducted man worships Me with

1 सन्तुष्टः सततं योगी यतात्मा दृढनिश्चयः ।

मय्यर्पितमनो बुद्धिर्यो मे भक्तः स मे प्रियः ॥

2 यस्मान्नोद्विजते लोको लोकान्नोद्विजते च यः ।

हृषीकेशं भयोद्वेगैर्मुक्तो यः स च मे प्रियः ॥

3 अन्पेक्षः शुचिर्दत्त उदासीनो गतव्यथः ।

सर्व्वारम्भ परित्यागी यो मद्भक्तः स मे प्रियः ॥

4 यो न हृष्यति न द्वेष्टि न शोचति न काङ्क्षति ।

शुभाशुभपरित्यागी भक्तिमान् यः स मे प्रियः ॥

5 सम शत्रौ च मित्रे च तथा मानापमानयोः ।

श्रीतोष्णसुखदुःखेषु समः सङ्गविवर्जितः ॥

6 तुल्यनिन्दास्तुतिर्मान्नी सन्तुष्ट येन केनचित् ।

अनिकेतः स्थिरमतिर्भक्तिमान् मे प्रिय नरः ॥

7 ये तु धर्म्माद्यन्तमिदं यथोक्तं पर्य्युपासते ।

अदधाना मत्परमा भक्तास्तेऽतीव मे प्रियाः ॥

exclusive devotion, he is to be considered even as righteous because he is rightly determined.”¹

“Such an one quickly becomes righteous-souled, for he comes to perpetual peace, Swear, O son of Kunti, my devotee never is destroyed.”²

The substance is summarised by Suresvara Āchārya, the first Mohant or Abbot of the Srīngari Math, founded by his preceptor Sankarāchārya, in “Naishkarmasiddhih”—

“Of him who has attained the true vision of “Atma” (the Supreme) non-hater and the rest are unworked for attributes and not forms of spiritual exercise.”³

This universal aspect of character is applied to the four types of men not necessarily castes as known to ancient Egypt and India. The four types are mentioned:—

“According to the classification of action and qualities the four castes are created by me. Know me, non-actor and changeless, as even the author of this.”⁴

The types can be generally described as men with natural proclivity. (1) to learn and teach (2) to found and maintain social and national order (3) to increase provision and (4) to work under direction. The expression in action of the four types is described as follows:—

“The duties of Brahmans, Kshatriyas, Vaisyas and also of Sudras are divided into classes by the qualities arising from nature.”⁵

“Internal and external self-control, purity, forgiveness, rectitude, learning, spiritual perception, and faith are the nature-born duties of Brahmans.”⁶

¹ अपि चेत् सुदुराचारो भजते मामनन्यभाक् ।

साधुरेव स मन्तव्यः सम्यग् व्यवसितो हि सः ॥

(Bhagavad Gita, IX, 30)

² क्षिप्रं भवति धर्मात्मा शश्वच्छान्तिं निगच्छति ।

कौन्तेयः प्रतिजानीहि न मे भक्तं प्रणश्यति ॥

(Bhagavad Gita, IX, 31)

³ प्राप्त आत्मप्रबोधस्य अद्वैतत्वादयोगुणाः ।

अथलतो भवन्तस्य न तु साधनरूपिणः ॥

⁴ चातुर्वर्ण्यं मया सृष्टं गुणकर्मविभागशः ।

तस्य कर्त्तारमपि मां विद्वत्कर्त्तारमवययम् ॥

(Bhagavad Gita, IV, 13)

⁵ ब्राह्मणक्षत्रियविशं शूद्राणाञ्च परन्तप ।

कर्माणि प्रविभक्तानि स्वभावप्रभवैर्गुणैः ॥

⁶ शमो दमस्त्वपः शौचं क्षान्तिरार्जवमेव च ।

ज्ञानं विज्ञानमास्तिक्यं ब्रह्मकर्मस्वभावजम् ॥

(Bhagavad Gita, XVIII, 41-42)

"Heroism, vigor, patient endurance, presence of mind, not turning back in battle, liberality, lordliness, are the nature-born duties of Kashatriyas."¹

"Agriculture, breeding of cattle, and commerce are the nature-born duties of Vaisyas; and of Sudras the nature-born duty is that of which the essence is to serve."²

Finally individual action is left to individual conscience:—

"Whoever performs action that has to be done, without depending upon the fruit of action, is the man of renunciation as well as the performer of right action and not the mere giver up of consecrated fire and works of the law."³

Here, perhaps, a repetition may not be wholly useless. All that can be conceived in the universal aspect independently of time, place and individuality is to be taken as an expression of the Divine Archetype, inseparable in thought from Being *per se* or Reality itself. From this view-point food is declared as Soma or universal sapor:—

"Also entering into the earth, I uphold these creatures by my power, and I nourish all vegetables by becoming Soma, the embodiment of sapor."⁴

And the eater of food as fire so heat and air:—

"I, becoming Vaisvanara and entering into the bodies of living creatures, digest the four kinds of food, being joined with the upward and downward life-breaths."⁵

The above declaration, however efficacious in removing spiritual antipathy based on difference in the use of food by people or individuals, is not helpful in the selection of food

¹ शौर्यं तेजो धृतिर्दाक्ष्यं युद्धे चाप्यपलायनम् ।

दानमौश्रवभावश्च क्षात्रं कर्मस्वभावजम् ॥

² कृषिगौरव्यवाणिज्यं वैश्यकर्म-स्वभावजम् ।

परिचर्यात्मकं कर्म शूद्रस्यापि स्वभावजम् ॥

(Bhagavad Gita, XVIII, 43-44)

³ अनाश्रितः कर्मफलं कार्यं कर्म करोति यः ।

स संन्यासी च योगी च न निरग्निर्चाक्रियः ॥

(Bhagavad Gita, VI, 1)

⁴ गमाविश्य च भूतानि धारयाम्यहमोजसा ।

पुष्पानि चौषधीः सर्वाः सोमो भूला रसात्मकः ॥

⁵ अहं वैश्वानरो भूला प्राणिनां देहमाश्रितः ।

प्राणापानसमायुक्तः पचाम्यन्नं चतुर्विधम् ॥

(Bhagavad Gita, XV, 13, 14)

by individuals. For practical guidance all kinds of food are divided into three classes :—

“Foods which promote longevity, mental tranquillity, industry, harmony of bodily functions, cheerfulness, and sympathy, with those of like temperament, and are succulent, oleaginous, producing permanent benefit to the body, and the composition of which is ascertainable at sight, are attractive to those in whom the quality of *sattva* is dominant.”¹

“Foods excessively bitter, sour, salt, hot, pungent, dry and ardent are attractive to those in whom *rajas* prevails and are productive of unpleasantness, suffering and disease.”²

“Foods insufficiently cooked, deprived of savour, offensive in odour, not fresh and unfit for sacrificial offering are attractive to those in whom *tamas* prevails.”³

The technical term *Sāttvika* and the rest are thus explained :—

“O Thou of mighty arms, *sattva*, *rajas*, and *tamas* these *Prakriti*-born qualities bind to the body the unchanging lord of the body.”⁴

“Among them *sattva*, illuminative on account of its transparency and restfulness, O sinless one, ties through attachment to happiness and knowledge.”⁵

“Know *rajas* to be the embodiment of desire, and the producer of thirst and relish; that, O Kunti's son, ties the ego through attachment to action.”⁶

“Know *tamas* as born of insensibility the deluder of all

¹ आयुःसत्त्व-वल्लारोग्य-सुख-प्रीति-विवर्द्धनाः ।

रस्याः स्निग्धाः स्थिरा हृद्या आचाराः सान्त्विकप्रियाः ॥

² कट्वास्त्रलवणान्युष्ण-तीक्ष्णरुचिदाहिनः ।

आचारा राजसस्येष्टा दुःखशोकामयप्रदाः ॥

³ यातयामं गतरसं पूति पर्युषितञ्च यत् ।

उच्छिष्टमपि चामेथं भोजनं तामसप्रियम् ॥

(Bhagavad Gita, XVII, 8-10)

⁴ सत्त्वं रजस्तम इति गुणाः प्रकृतिसम्भवाः ।

निवध्नन्ति महाबाहो देहे देहिनमव्ययम् ॥

⁵ तव सत्त्वं निर्मलत्वात् प्रकाशकमनामयम् ।

सुखसङ्गेन वध्नन्ति ज्ञानसङ्गेन चानघ ॥

⁶ रजो रागादमकं विद्धि त्वया सङ्गसमुद्भवम् ।

तन्निवध्नन्ति कौन्तेय कर्मसङ्गेन देहिनम् ॥

(Bhagavad Gita, XIV, 5-7)

embodied creatures, O Bharata's son ; it ties through heedlessness, laziness, and sleep."¹

"Sattva attaches to happiness, rajas to actions, while tamas, veiling the power of discrimination, attaches to heedlessness."²

"Overcoming rajas and tamas, sattva asserts itself, O Bharata's son ; similarly rajas, sattva and tamas, and tamas, sattva and rajas."³

"When at every gate of the body there is the illumination of knowledge, then know that sattva is dominant."⁴

"Greed, initiation of action, energy in great worldly achievements, unrest, and thirst, these are born on rajas becoming dominant."⁵

"Non-illumination, non-initiation, heedlessness and delusion,—these, O son of Kuru, are born on tamas becoming dominant."⁶

With these general statements the selection of food by individuals is left to his own judgment:—

"For him who is regulated in food, in enjoyment, in exertion of work,—regulated as well in sleep and walking,—meditation becomes the destroyer of all suffering."⁷

A word about the Bhagavad Gita in conclusion: At the present time it is the most well known of all canonical Brahman

1 तमस्वज्ञानजं विद्धि मोहनं सर्वदेहिनाम् ।

प्रमादालस्यनिद्रामिस्त्रिविधाति भारत ॥

2 सत्त्वं सुखे सञ्जयति रजः कर्मणि भारत ।

ज्ञानमावृत्य तु तमः प्रमादे सञ्जयत्युत ॥

3 रजस्तमश्चामिभूय सत्त्वं भवति भारत ।

रजःसत्त्वं तमश्चैव तमः सत्त्वं रजस्तथा ॥

4 सर्वद्वारेषु देहेऽस्मिन् प्रकाश उपजायते ।

ज्ञानं यदा तदा विद्याद् विदुषं सत्त्वमित्युत ॥

5 लोभः प्रवृत्तिरारम्भ कर्मणामशमः स्पृहा ।

रजस्येतानि जायन्ते विदुषे भरतर्षभ ॥

6 अप्रकाशोऽप्रवृत्तिश्च प्रमादमोह एव च ।

तमस्येतानि जायन्ते विदुषे कुरुनन्दन ॥

(Bhagavad Gita, XIV, 8-13)

7 युक्ताहारविहारस्य युक्तचेष्टस्य कर्मसु ।

युक्तस्वप्नावबोधस्य योगो भवति दुःखहा ॥

(Bhagavad Gita, VI, 17)

Scripture in this country and abroad. The third quarter of the 19th century hardly knew of more than one edition of it in Bengali-script with a translation in classical Bengali by Ananda Chandra Vedantabagis and now there are numerous popular editions with Bengali translation, in prose and verse.

The first English translation was by Charles Wilkins. It was published under the authority of the East India Company in 1785. Through Emerson it gave to the English language the word "over-soul,"¹ obviously a mistranslation of "অধ্যাত্ম," literally meaning স্বভাব or "ownness." It also inspired Emerson's "Hymn to Brahma," not as well known as can be wished.

If the red slayer think he slays,
Or if the slain think he is slain.
They know not well the subtle ways
I keep, and pass, and turn again.
Far or forgot to me is near;
Shadow and sunlight are the same;
The vanished gods to me appear;
And one to me are shame and fame.
They reckon ill who leave me out;
When me they fly, I am the wings;
I am the doubter and the doubt,
And I the hymn the Brahmin sings.
The strong gods pine for my abode,
And pine in vain the sacred Seven,
But thou, meek lover of the good!
Find me, and turn thy back on heaven.

R. W. EMERSON.

It will be pleasant to remember the following verse as the source of Emerson's inspiration :—

य एनं वेत्ति हन्तारं यद्यैनं मन्यते हतम् ।
उभौ तौ न विजानीतो नायं हन्ति न हन्यते ॥

(Bhagavad Gita, II, 19)

"He who knows it as the slayer, and also he who knows it as the slain, they both know not rightly: it kills not, nor is killed."

¹ "Over-soul" —n. The all containing soul; the absolute reality that which includes all being; subjective or objective. (From Webster's Dictionary).
"That unity, that over-soul within which every man's particular being is contained and made one with all other."—Emerson.

—Webster's Dictionary.

The Wither-tip Disease of Citrus Plants. Part I.

By H. CHAUDHURI AND GOPAL SINGH.

The Wither-tip disease due to *Colletotrichum glæosporioides* Penzig., is probably the most destructive fungus disease known to attack the citrus plants. It is also known by the names of 'leaf spot,' 'lemon spot,' 'anthracnose,' etc., according to the injuries it causes. This disease is very common in India and has been found to be present on all species of citrus. It is uncertain where this disease originated at first but it is now found all over the world wherever citrus is grown. The writers have observed it on almost all citrus species all over India. In Lahore, it was found attacking the limes, the lemons, the pomello and the malta. The disease was mostly found to be confined to the twigs only, though occasionally leaves also were found to be affected (Plate 1, Fig. 1). The gardens and orchards in and around Lahore cultivating citrus plants were kept under regular observation during two seasons and inoculation experiments have been carried on both in the fields and in the laboratory.

The nurseries of Lawrence Gardens, Lahore, which were kept under close observation showed the signs of the disease in early February. The freshly attacked apical portions became leafless and were of ashen colour on which black acervuli developed later on. All the plants in the nursery were affected (Plate 1, Fig. 2) and later became leafless. The lemons and the sour limes suffered more than the oranges, the malta, and the sweet limes. Besides twig and leaf infection, fruit infection also occurs. Last season the authors came across a large number of cases in which unripe and young fruits fell down owing to the attack of the fungus. Flower infections have not so far been noticed. The different symptoms of wither-tip, leaf spot, anthracnose, canker and lemon spot depend upon the effects produced on the host plants. On leaves, spots of light green colour appear first which soon turn brownish. In moist weather fruit bodies soon appear as little dots and pinkish masses of spores soon ooze out from them. The disease usually starts at the apex and spreads downwards or from margin inwards. There is a sharp differentiation between the diseased and the healthy tissues. The affected leaves wither and die and the disease travels back causing the characteristic wither-tip. Young trees are sometimes entirely defoliated in this manner. Twigs of citrus are frequently and very severely attacked by the fungus. Many of the twigs are killed back

four or five inches. The infected twigs turn brown or ashen in colour and sooner or later become dotted over with numerous black acervuli (Plate 2, Figs. 3 and 4). The infected twigs when they grow old become over-grown with other saprophytes. The dying back of the affected twigs is usually a slow process but in some cases it may be sufficiently rapid to cause the leaves to wither and dry up. In certain cases older branches may even be affected. They turn yellowish at first, shed their leaves and ultimately die back. Unfavourable climatic conditions, lack of sufficient water in soil, want of proper nutrition, and presence of injurious salts may also produce somewhat similar symptoms. The trees in such cases usually drop their fruits. But the real wither-tip disease due to *Colletotrichum* can easily be distinguished from the physiological disease. Not only are specific organisms absent in those cases but the characteristic ashen colour of the wither-tip is absent. Also the absence of any resinous deposit as found in the physiological disease and the presence of numerous black dot like fruit bodies easily mark out the *Colletotrichum* infections.

Morphology of the fungus.

On dead twigs or on leaves the fruit bodies (acervuli) of the fungus are frequently seen as small dots or raised pustules. These acervuli are sparse, scarcely gregarious, sub-epidermal, erumpent, brown or black and cylindric. The shape of the acervuli is not uniform. On leaves, they occur on either surfaces irregularly disposed. Dark coloured stiff hairs, the setæ, are frequently seen around the margin of the acervuli. They may be either continuous or septate and may vary in length and colour when grown in cultures.

In order to study the internal morphology of the fungus free-hand sections were cut. Very young diseased twigs were selected. The sections show that the fungus kills all the parts outside the central wood and the infected portion is filled with the fungus hyphæ (Plate 3, Fig. 5). In leaves the acervuli seem to be superficial, only the upper portion of the mesophyll being affected. Diameter of the acervulus varies from 60 to 270 μ , and length of the conidiophores from 5 to 30 μ . Conidia measure 8.5–21 $\mu \times$ 3–7.5 μ . They are variable in shape even in the same acervulus and may be broadly oval or oblong.

There seems to be a great deal of difference of opinion regarding the colour of the spores. The spores were first described as hyaline but in 1894, Alwood described them as slightly greenish. Spaulding and Von Schrenk noted the same greenish colour as also many other writers. Rolfs, Fawcett and Lee have again described them as hyaline. The present authors have noted greenish colour of the spores and they are of opinion that the colour is due to dense protoplasmic granules and oil

globules. But the colour of the immature spores was very light and, if examined in strong transmitted light, could be described as hyaline.

Generally a spore has got only one nucleus but the authors have occasionally come across two or even three in some very large sized spores. The nucleus appears as a large clear area near the centre of the spore and takes the nuclear stains.

Study of the fungus in culture ; isolation.

The causal organism, *Colletotrichum gleosporioides* Penz., was isolated from a malta twig collected in late October, 1928. A small portion of the twig was washed in 10 per cent. Formalin and then in several changes of sterilised distilled water and finally rubbed with alcohol before being put in a sterilised moist chamber containing water. The spores came out in very large numbers and in a short time the water was full of spores. By means of a sterilized platinum loop, a small drop of the spore suspension was transferred to a tube of melted potato glucose agar and by means of poured plate method, pure culture of the organism was easily obtained.

Single spore isolations were also made. From a very dilute spore suspension, small drops were placed on a large number of clean and sterilised cover-slips. These were examined under the microscope and when only one spore was present in a drop, the cover-slip was transferred to a petri-dish containing potato glucose medium and placed upside down. Further transfers were made as soon as the mycelial growth spread beyond the cover-slip.

The mycelial growth not only covers the surface of the medium but penetrates it. The young hyphæ are of white colour and when young, the cells have dense granular contents. The cells measure $11-14 \mu \times 5-7 \mu$.

The acervuli or the fruit bodies make their appearance four or five days after the inoculation is made. In the beginning some of the hyphæ become darker in colour and more granular, their cells become short and broad. These hyphæ are very compact forming a sort of stroma. From the stroma, numerous conidiophores are developed from the ends of which numerous conidia are budded off. In forming conidia, the apical portion of the conidiophore becomes swollen and filled up with granular contents. After it attains the right size, it is constricted off at the base. In young and newly formed acervulus, spore formation is very active, and the spores collect round the acervulus in the form of a big pinkish mass. The acervuli in time become round and blackish in colour and hardened in texture. Sections of acervuli show a considerable parenchymatous tissue-like structure made up of the surrounding filaments. Inside this lie the spores that are budded off

from the conidiophores. Around the margin and sometimes in the centre of the acervulus setae are seen. They are dark brown in colour and are made up of 3 to 4 cells. They vary a good deal in their size, $31.5-175\ \mu$. The setae are not of much importance since they are missing altogether in many cases. Besides the conidia formed in the acervuli, other conidia are formed by short lateral branches of the main hyphae. No other kind of spore formation nor any perfect stage of the fungus has been found so far. In old cultures, the mycelium growing in the culture medium turns grey and the hyphae have beaded appearance, and they lose their cell contents.

To study the germination of the spores, hanging drop cultures were made in sterilised water. The spores germinated in about 6 hours (25°C) but changes in the protoplasm of the spores began earlier than that. The protoplasm becomes more granular and the nuclear portion loses its rounded shape. It elongates, becomes granular and finally mixes up with the granular protoplasm. Next a germ tube is formed usually at one end of the spore into which the contents of the spores pass on. Sometimes germ-tubes are formed from both ends of the spores. The germinating spore in about three days' time forms a considerable mycelium and conidia are formed from the lateral branches of the larger hyphae. Acervuli were not formed in hanging drops.

When too many spores are placed in a hanging drop the germination is markedly changed. Some of the spores were seen to become two-celled at the formation of the germ-tube. Most of the spores after forming small germ-tubes give rise to small rounded chocolate coloured bodies. These are appressoria or rather chlamydospore-like structures (Plate 3, Fig. 6). The filaments forming these structures lose their granular contents altogether which pass into the newly formed structures. Very old hanging drop cultures containing a single spore never formed any such structures. Hence the formation of such chlamydospore-like structures is not due to old age but to unfavourable conditions regarding dearth of food material, staling products, etc. When such spores were placed on fresh culture media, they readily germinated, gave out branches and formed normal mycelia. It has already been mentioned that a good deal of variation is found even in the spores of the same acervulus. The spores give an average measurement of $5.7\ \mu \times 12.9\ \mu$.

Growth in different media.

The fungus was grown in the following seven media. Barley agar, prune agar, gram agar, maize agar, bean agar, pea agar and Czapeck's synthetic medium (modified). Five gm. of dry materials were boiled in 100 cc of water and solidified with 2 per cent. agar. About 20 cc of the material were put in

9 cm. diameter petri dishes. Inoculated dishes were kept in room temperature and observations were made every third day.

In bean and gram agar the aerial growth was perfectly white and the hyphæ were very long. In bean agar pinkish spore masses appeared very early near the centre of the petri dishes but in gram agar they appeared very late. No blackening of the medium took place in either case.

In pea agar pinkish spore masses are developed in rings and the hyphæ are irregularly formed. No blackening of the culture medium takes place.

In prune agar the aerial growth is profuse and is perfectly white in the beginning. Later they become very long and turn greenish black. The medium becomes perfectly black in about a fortnight and the hyphæ as also the conidia become blackish in colour.

In barley agar, moderate aerial growth takes place. Small blackish acervuli are developed which bear setæ. They are also arranged in rings. The medium became blackish in 9 days.

Scanty aerial growth takes place in maize agar and a few blackish acervuli are formed.

In Czapeck's synthetic medium, white, dense, compact aerial growth takes place and the medium very soon turns black showing early staling. Restricted acervuli formation takes place.

The following table shows the spreading of the mycelium in various media.

No of days.	Barley agar.	Prune agar.	Gram agar.	Maize agar.	Bean agar.	Pea agar.	Czapeck's medium.
3	14 mm.	17 mm.	17 mm.	12.5 mm.	18 mm.	14.3 mm.	21 mm.
6	34 "	70 "	50 "	48.5 "	53 "	50.2 "	45 "
9	79 "	90 "	90 "	81.2 "	90 "	90 "	65 "

Since differences were found in cultural characteristics of the fungus when grown on different media, the authors measured the spores to find out if there were any variations in the size of the spores. For this purpose 100 spores were measured from each culture grown in different media. In taking measurements Burger's method was followed as it was found to be convenient and more trustworthy. 'A dilute suspension of the spores taken from the medium was made in sterilised tap water and a drop of the suspension was placed on a microscope slide and covered with a cover glass. It was necessary to take the measurements quickly because the spores did not remain quiet for any length of time. The image of the spores was then

thrown on a drawing paper by means of camera lucida, and the lengths and widths were quickly marked with a pencil. The microscope was so adjusted that one micron on the micrometer scale was equal to one millimetre on the paper. Therefore after the length and width was indicated on the paper the spore-size could be easily ascertained by means of a millimetre rule.' The authors instead of marking the lengths and widths only had drawn the outline of the spores and the nuclei. This had the advantage of not only representing the general shape of the spores but it avoided any confusion which is possible if marked with dots only. The outlines were made only when the spores were stationary.

The following table shows the spore measurements in different media.

Medium.		Mean length.	Mean breadth.
Czapeck's medium	..	12.2 μ	4.0 μ
Maize agar	..	12.5 μ	2.2 μ
Barley agar	..	12.6 μ	4.0 μ
Potato glucose agar	..	12.9 μ	5.7 μ
Gram agar	..	13.1 μ	5.0 μ
Pea agar	..	13.9 μ	4.9 μ
Bean agar	..	15.1 μ	4.9 μ
Prune agar	..	15.8 μ	4.3 μ

From the study of above, it is clear that variation in lengths and breadths of the spores depends on the effect of the medium.

Effect of different concentrations on growth.

Different concentrations of Czapeck's medium and potato glucose agar were made. In the latter case only the lower concentrations were made. About 20 cc of medium of each strength was poured in a petri dish and inoculations were made in the centre of the petri dishes. The various petri dishes were placed in the room temperature and in taking measurements two readings were taken at right angles to one another and the mean taken as the diameter of the colony.

The following tables A and B show the spread of the fungal mycelium in different concentrations of Czapeck's and Potato glucose agar media respectively.

TABLE A.

No. of days.	2N.	N.	N/4.	N/16.	N/64.
3	20 mm.	21 mm.	16 mm.	15 mm.	14 mm.
6	40 mm.	45 mm.	37 mm.	37 mm.	34 mm.
9	53 mm.	65 mm.	55 mm.	54 mm.	51 mm.
10	69 mm.	90 mm.	66 mm.	65 mm.	59 mm.

TABLE B.

No. of days.	N.	N/2.	N/4.	N/8.	N/16.	N/32.
3	26 mm.	21.9 mm.	25 mm.	20.1 mm.	20 mm.	15 mm.
6	63.9 mm.	56.4 mm.	56 mm.	52.0 mm.	48 mm.	51 mm.
9	90.0 mm.	90.0 mm.	85 mm.	82.0 mm.	76 mm.	72 mm.

The study of the tables given above shows that diameter of the fungal mat increases regularly from lower to higher concentrations and that it is greatest in normal. In concentration higher than normal spreading becomes slower.

Along with the rate of spread in the two media, the sizes of the spores in the different concentrations of Czapeck's were measured. An average from measurements of 100 spores was taken and the following shows the mean lengths and breadths of spores in different concentrations.

Concentration.	Mean length.	Mean breadth.
2N	12.2 μ	4.0 μ
N	12.6 μ	4.6 μ
N/4	13.5 μ	4.7 μ
N/16	14.4 μ	4.8 μ
N/64	14.6 μ	4.4 μ

The above shows that from lower to higher concentrations the size of the spores decreases. Regarding widths no such regularity is seen, though in higher concentrations, spore size becomes smaller. It has been found also that the number of spores decreases with higher concentrations and in 4N concentration, no spores were formed at all.

If we study the tables given before showing the spread of the hyphæ and the sizes of the spore formed in different concentrations, we find they are inversely related. In lower concentrations when the spread or rather the vegetative growth is less the spores are larger and more numerous, while in higher concentrations spread is greater and the spores are smaller.

With age, cultures show signs of staling sooner or later. The culture media become dark in colour. The rate of giving out of staling products has been studied in the different concentrations of Czapeck's and the following shows the number of days it took to turn the different concentrations of Czapeck's medium dark.

Concentrations..	8N	4N	2N	N	N/4	N/16	N/64
No. of days	..4	4	10	13	14	15	15

It shows that staling begins very soon in higher concentrations and very late in lower ones.

The temperature range for the growth of the fungus has also been studied. It can grow between 15° and 35°C but best grows between 21° and 25°C. The thermal death point of the fungus has also been found and it lies between 65° and 66°C (Ten minutes exposure).

Isolation of different strains.

Since this disease has been found attacking all citrus species and varieties, it was thought necessary to isolate the organism from as many different species as possible and grow them on different media to know if there was any difference between them and the one originally isolated from the Malta twig. Out of the very large number of isolations, three only viz., one isolated from *C. acida* (young apical shoot), one from *C. lemon* (young apical shoot) and one from *C. acida* (mature leaf) showed slight differences in the measurements of spores and perhaps might be called strains. These strains were compared with the one from original isolation regarding growth in different media and temperature and also regarding their power of infecting other hosts. A very large number of cross inoculations have been carried on and each strain succeeded in infecting all the other hosts. Besides slight morphological differences, no physiological differentiation has been found.

Dissemination.

When the fungus attacks the leaves or twigs, they die and become brownish in colour on which dot like acervuli are formed. They are present all over the surface of the dead tissues and are the sources of infection. If the environmental conditions

are favourable to the fungus, it causes an epidemic. The disease is most common in the spring season (end of January to middle of April) when new shoots are formed. These young and tender tissues are easily attacked by the fungus. Under humid conditions the spores ooze out of the acervuli in large pinkish masses and may be washed to other parts by rain water or even by dew drops. Or if dry conditions prevail after the spores have oozed out, they may be carried by wind and favourable conditions recurring, will germinate causing new infections. Older leaves and twigs may be attacked at any time when the conditions for the growth of the fungus are favourable. Plants showing low vitality are easily attacked. This may be caused by lack of proper nutrition or water in the soil or may be due to injurious salts or may even be due to unfavourable temperature and moisture conditions. Trees injured by gum diseases or other diseases or due to long continued drought fall an easy prey to the disease.

Infection.

Usually the infection takes place at the tip or apex of the young shoot in the spring season. In artificial inoculation experiments performed in the laboratory, it was found that young and tender parts were first attacked. It has been noticed that weather and other environmental conditions have important influence upon the severity of the disease. In 1929, due to exceptional weather conditions the disease was very severe and caused great loss to citrus plants in the Panjab. On 30th and 31st January and 1st February, the weather was very cold and frosty, the temperature falling down to 14.5°F. During those days and the whole of the first week of February, the sky remained almost completely overcast. No rain actually fell but due to intense cold the dew drops froze and chilled the plants which became very weak. When the cold wave passed, the fungus finding the hosts in very weak condition, developed so quickly that all the plants in the nursery of the Lawrence Gardens were killed. The combined effect of low temperature, high moisture content of the air and the absence of Sun lowered the vitality of the young plants in the nursery so much that the fungus killed them outright. If any one of these factors had been different or absent, the whole bed would not have been killed. Older plants, though they greatly suffered were not killed.

The very low temperature of that year proved favourable for diseases which are not ordinarily seen in the Punjab. For instance *Verticillium tubercularioides* was found associated with *Colletotrichum* in many cases causing greater damage, but it has not been seen this year.

This note is published as a preliminary work. Further work is proceeding and will be published as Part II.

Before concluding the authors express their indebtedness to the Imperial Mycologist, Agricultural Research Institute, Pusa, for confirmation of the specific determination of the fungus.

Panjab University.

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FIG. 1. A twig of *C. acida* with diseased leaves. Note the dot like acervuli.



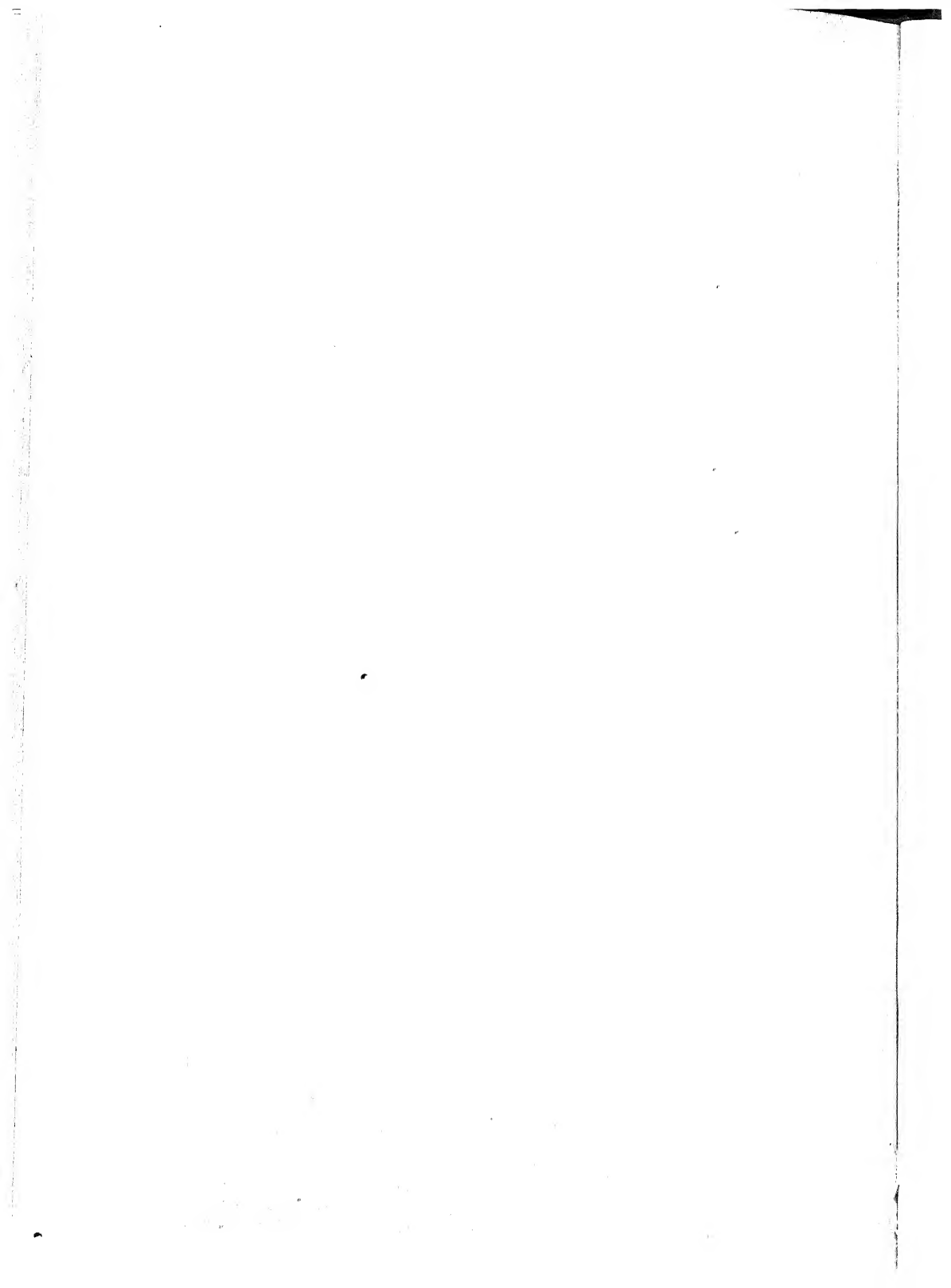




FIG. 3. A diseased twig with numerous acervuli. Note the sharp line of demarcation between the healthy and the diseased tissues.

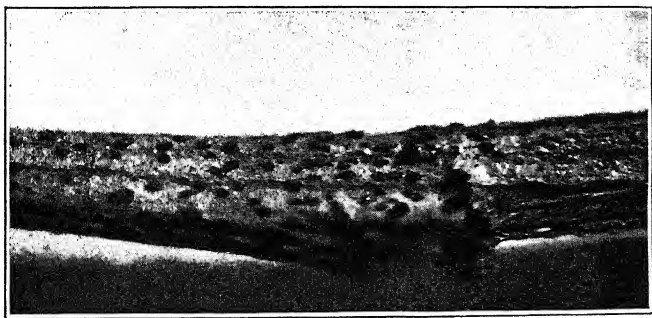


FIG. 4. A portion of above, more magnified.

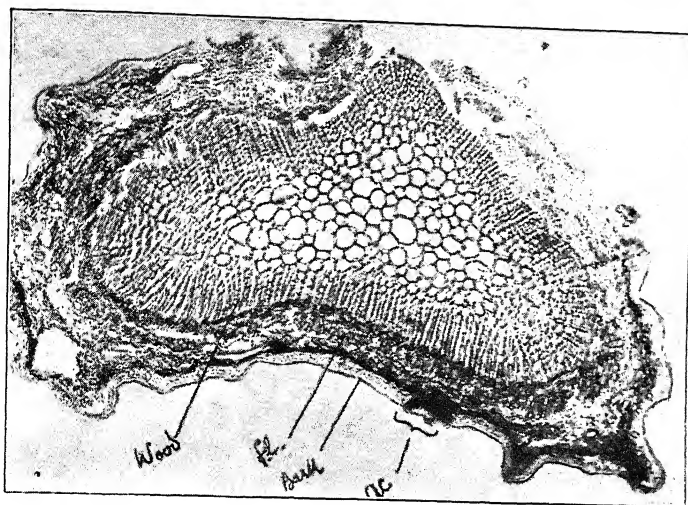


FIG. 5. Transverse section of a diseased twig. *fl*-fungal layer, *ac*-acervulus.

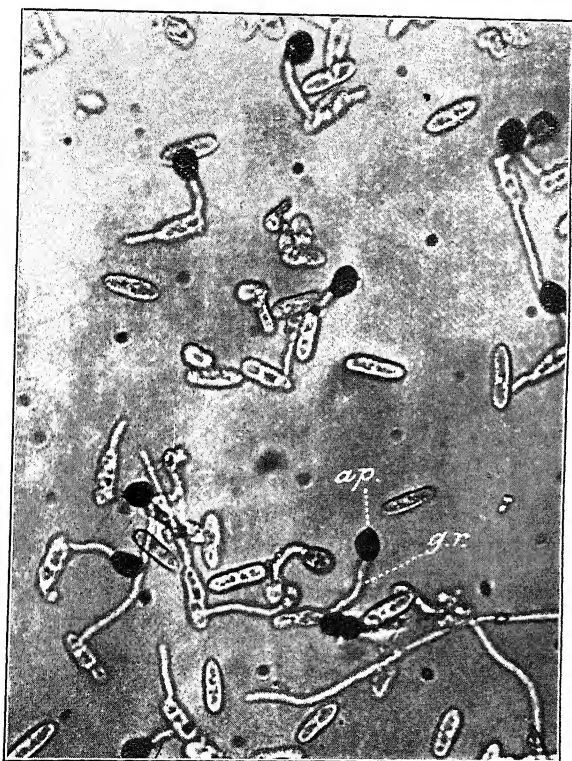


FIG. 6. Photomicrograph of a hanging drop containing a large number of germinating spores showing the formation of appresoria or rather chlamydos-

Notes on the Organisms in the Filtered water of Calcutta.

By K. BISWAS.

During the month of May, 1929, brown scum was noticed coming out of taps of Calcutta water supply and specimens of the sediments were sent to me for examination. Samples were collected from different parts of the City of Calcutta. Of these, Pulta and Lee Road samples were found to contain just sufficient quantities of material for the purpose of investigation. The examination of these samples showed the presence of both vegetable and animal organisms. Of the animal organisms the presence of *Infusoria*, *Rotifera*, and *Nematoda* was not uncommon. Among the *Protozoa*—the well-known iron Protozoon (*Arcella*) was of frequent occurrence. Of the *Dinoflagellata*, *Peridinium* species were also observed.

The vegetable organisms consisted mainly of bundles of a species of *Fungus* filaments composed of fine hyaline threads which were not sufficient for definite determination. Filaments of another species of septate *Fungus*, mixed up with the matrix were also observed but did not permit of making accurate identification. *Leptothrix ochracea* which is taken by some as one of the typical iron bacteria was present in large quantities. Species of *Chlamydothrix* (*Cladothrix*?) were frequently present but only in short broken pieces of filaments which are not sufficient for definite specific identification. The occurrence of *Gallionella feruginea*, a typical iron bacterium, was rather rare. Scattered filaments of *Oscillatoria* species and fragments of the shells of *Diatom* other than *Synedra affinis* var. *fasciculata* have also been noticed. This species of *Diatom-Synedra affinis* var. *fasciculata* was present in almost all the samples. Pollen grains and pieces of xylem vessels too were observed in the material examined. It may, however, be mentioned that *Crenothrix polyspora* which was suspected to be present appeared to be absent in the samples examined by me. This species is an inhabitant of much cooler climate and frequently occurs in the freshwaters of the European and American Continents. It may be remarked however that the vegetable organisms found did not appear to be seriously harmful to human beings.

The chemical analysis of the water during that period shows the presence of about 35% volatile solid, 32.5% sand and silica and 35% mineral matter. The mineral matter in this case is entirely iron-oxide. The following table will illustrate in detail the average chemical contents of the water and the results of the bacteriological examination of the water samples.

(a) CHEMICAL EXAMINATION.

The results are expressed in parts per 100,000.

Nature of Water	DISSOLVED SOLIDS IN			Suspended solids or silt	Chlorine	F. Ammonia	Albuminoid Ammonia	Total hardness	Permanent hardness	Nitrogen as Nitrates and Nitrates	(oxygen absorbed)	Nitrites
	Raw water	Settled water	Filtered water									
Clear and transparent looking filtered water collected during the first half of May 1929 from Pulka.	50	22.5	17	78.5	3.8	.0014	.0064	14.5	8.0	.019	.025	Nil

(b) BACTERIOLOGICAL EXAMINATION—

1. Total bacterial count (a) River water—45,000 (b) Filtered water—32. Percentage of reduction—99.93.
2. Cholera microbe—Not present.
3. Bacilli of colon group—Not present in 10 c.c. Town supply.

The organisms present in the samples of the tap-water mentioned above were all mixed up and the identity and details of structure of these organisms were not quite clear. Hence there was the necessity of studying them by cultivating them in different suitable media. Out of the different media tried normal saline i.e. NA-CL 6.5 grms. and Distilled water 1000 c.c. proved to be quite a good medium for the growth of the two algæ—*Protococcus viridis* and *Chlorella vulgaris*. These two algæ later on appeared in some samples contained in the original bottles which were kept tightly closed with glass stoppers in room temperature and in diffused light inside the herbarium. The algæ found in these bottles after about five to six months are chiefly *Lyngbya ochracea*, *Synedra affinis* var. *fasciculata*, *Protococcus viridis* and *Chlorella vulgaris*. The difference in structure between the forms grown in artificial culture with those of the bottles is that there is not so much development of brownish pigment in the artificial culture of *Synedra affinis* var. *fasciculata* and marked deficiency in the presence of iron oxide on the sheaths of *L. ochracea*. *Chlorella vulgaris* of the culture is smaller in dimensions and Chloroplasts are rather yellowish green; while cultivated forms of *Protococcus viridis* are somewhat larger in dimensions, the Chloroplasts more deeply green and the cells having greater tendency towards the formation of a compact colony adhering to the substratum. Further culture experiments especially of *Leptothrix ochracea* and other iron bacteria which are available in this country are being carried on with a view to deciphering some disputed points in the life history of these organisms and the results will be published in a subsequent paper.

Short notes on the systematic position of the organisms observed in the samples are given below.

Synedra affinis, Kuetz. var. *fasciculata* (Kuetz.)

(Plate 4, Fig. 7)

Cells scattered or forming a colony, in valve view straight, elongate, somewhat fusiform narrower at both ends, obtusely or subacutely rounded, sometimes more or less constricted below the apices; in girdle view linear cylindrical truncate at both ends; pseudoraphi lanceolate, conspicuous, fine. 70-80 μ long, 4 μ wide, 15 markings in number in each space of 10 μ length, frequently 3 markings in every 2 μ .

Hab. In tap water mixed with other algæ especially with *Leptothrix ochracea*, or forming a colony in gelatinous matrix. Collected by T. K. Ghose from 1st to 10th May in Calcutta. Geogr. Distrib. East and west Europe.

Chlorella vulgaris, Beyerinck.

(Plate 4, Fig. 6 a-b.)

Cells spherical forming colony, yellowish green, 4-8 μ in diameter, with one pyrenoid; chloroplast plate-like; cell wall smooth, thin, hyaline; cell-contents coarsely granular, green.

Hab. In tap water. Growth in the original bottle was visible after about 2 months. Collected from tap water at Pulta Central Collecting Well by T. K. Ghose, on the 7th May, and 2nd July, 1929.

Geogr. Distrib. Widely distributed.

This alga was grown in pure culture of normal saline and the cells were found to be rather smaller than its normal size varying from 2-6 μ .

Protococcus viridis, Ag.

(Plate 4, Fig. 4 5.)

Cells single or often associated in a plate-like colony spherical, or angular by mutual pressure, 4-8-12 μ rarely up to 20 μ ? in diameter; chloroplasts plate-like; pyrenoid not visible; cell wall smooth hyaline, cell contents coarsely granular, green.

Hab. In tap water at Pulta. Growth in the original bottle was visible after about 2-3 months. Collected by T. K. Ghose, on the 7th May, 1929.

Geogr. Distrib. Widely distributed in Europe, America, Australia and India.

Lyngbya ochracea (Kuetz.) Gom.

(Plate 4, Figs. 1 a-h and 2 a-g.)

Plantmass rust coloured; filaments aggregated together, about 2-3 μ in width; sheath at first thin and colourless but later on thick, and by absorption of iron oxide becoming swollen with encrustation of iron oxide; cells somewhat constricted at the pellucid cross walls, as long as broad, 1.5 to 2.5 μ in length, 1.5 to 2.8 μ in width; cell contents almost homogeneous, blue-green.

Hab. In tap water, present in all the samples as reddish brown scum associated with *Synedra affinis* var. *fasciculata*. Collected by T. K. Ghose from different parts of Calcutta, from 1st to 10th May, 1929.

Geogr. Distrib. Widely distributed in Europe, America, Africa and India.

The systematic position of this alga is not quite definite yet, as it varies in structure and form due to its occurrence in different conditions. When it is found coated with iron oxide as observed in tap water and in European moors where iron is present in the substratum with other organic matter the

alga absorbs iron oxide which is deposited on its sheath and it is then, as thought by Naumann, identical with the well-known iron bacterium *Leptothrix ochracea*. I have observed by cultivating this alga in pure water and normal saline that the filaments become longer and sometimes flexous and wavy in structure without iron encrustation. This alga in normal form without iron deposit has been found to grow abundantly in the settling tank among other algæ growing in it and forming a crust on the submerged sidewalls. But as it passes through pipes it absorbs iron oxide and is converted into what is called *Leptothrix ochracea*—the iron bacterium. Experiments are being carried on to show the nature of the absorption of iron-oxide by this alga. The Indian forms of this alga are slightly larger than the forms observed in other parts of the world.

Galleoneilla feruginea, Ehrenberg.

(Plate 4, Fig. 3.)

Filaments spirally twisted, about $2\ \mu$ in width, without any partition walls.

Hab. In tap water, from 1st to 10th May, 1929. Collected by T. K. Ghose, very rare.

Geogr. Distrib. Europe and America.

Dr. S. R. Bose, Professor of Botany, Carmichael Medical College, Calcutta, who was supplied with the fungus species found in the tap water noted in this paper for examination, obtained the following results from his culture experiments and is of opinion that it is a *Fusarium* species. "The fungus formed a tangled mass of white hyphæ, the growth was very poor in all solid media tried—agar, malt-extract agar, etc. It grew very favourably in liquid beef broth medium (PH 7.4) and formed a number of spores with Chalamydospores-terminal and intercalary (within the hyphæ), it can be seen that it is a *Fusarium* species."

I am indebted to Mr. J. C. Mukherjee, Chief Executive Officer, Calcutta Corporation, for offering me the opportunity of examining the samples of the impurities found in the filtered water of Calcutta. I am also grateful to my friend Dr. Hans Molisch, Hofrat Professor, University of Vienna, one of the greatest authorities on Iron bacteria, who was kind enough to examine the materials and confirm the results obtained by me; and last but not least to Dr. T. K. Ghose, L.M.S., F.C.S., the Chief Analyst, Calcutta Corporation, for supplying me with the data regarding water analysis.

ROYAL BOTANIC GARDEN

Sibpur, near Calcutta

The 27th December, 1929

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- Fig. 6, (a) . . *Chlorella vulgaris* from pure culture in normal saline—X 750.

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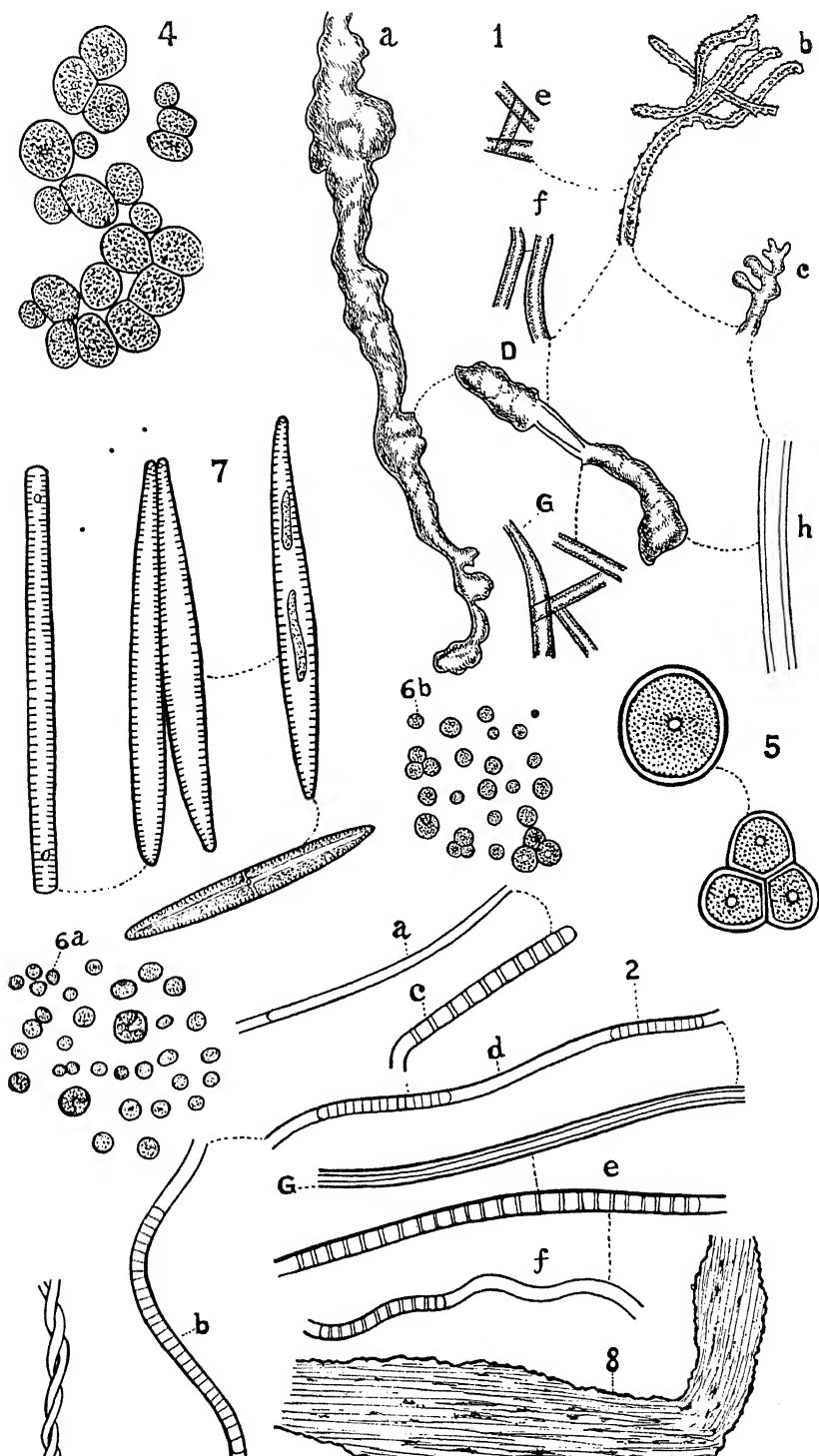
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Fig. 7 . . . *Synedra affinis* var. *fasciculata* X 1000.
Fig. 8 . . . *Fungus* sp. part of filaments in a bundle as it is found growing in the original sample of tap-water - highly magnified.



On Tests and Measures of Group Divergence.

Part I: Theoretical Formulæ

By PRASANTA CHANDRA MAHALANOBIS

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I. INTRODUCTION ,

1. In many statistical investigations two important questions arise in dealing with two or more "samples". Let S and S' be two given samples. Then either of two things may have happened:—

(A) both S and S' were drawn from the same group G ,¹

or

(B) the samples S and S' were drawn from two different groups G and G' .²

¹ I have used the word "group" in the present paper in very nearly the same sense as the word "population" is used in statistical literature. A "group" will denote any collection of individuals or entities; the individuals (constituting the group) may be distinguished from one another, but all of them possess certain common characteristics, by virtue of which common characteristics they are supposed to belong to the same "group". I have reserved the word "population" for use in a slightly more general sense; so that when necessary we shall be able to speak of the existence of "groups" within a population. A "sample" is an aggregate of measurements, in one or more specified characters, of a finite number of individuals belonging to the same group (or population). It is throughout assumed in the present paper that all samples are "random" samples, i.e., the individuals constituting the sample are not selected in any way, and are drawn in a random manner from the group or population concerned.

² A third alternative is that S and S' were both drawn from the same group (or population) but either or both of them were selected samples. This hypothesis is however excluded by our assumption that all samples are random samples. (See footnote 1.)

Any criterion which will distinguish between (A) and (B) *i.e.*, determine whether the two given samples are drawn from the same or from two different groups (or populations) may be called a *test* of group divergence.

In case the two samples S and S' are considered to be drawn from two different groups G and G' , it is obvious that G' may be any one of an infinite number of groups differing only slightly or very greatly from G . Any coefficient which would furnish information regarding the actual amount of the divergence subsisting between G and G' may be called a *measure* of group divergence. The distinction between a "test" and a "measure" of group divergence is fundamental: a test merely tells us whether the two groups (from which the two given samples are drawn) are different or not, while a "measure" gives us a quantitative estimate of the magnitude of the difference (if any) between the two groups.

2. *Notation.* In dealing with more than one group, it is necessary to distinguish carefully between different type of means and standard deviations.

Let x_{pqt} represent a single measurement of the t^{th} individual in the q^{th} sample for the p^{th} character, and let n_{pq} be the total number of individuals in the q^{th} sample for the p^{th} character, N_p the total number of samples available for the p^{th} character, and P the total number of characters for which measurements were taken.

The total number of individuals for whom measurements of the p^{th} character are available will be given by

$$n_p = S_q [n_{pq}] \quad \dots \quad (2.1)$$

where S_q denotes a summation for all samples, *i.e.*, for all values of q (from $q=1$, to $q=N_p$). When n_{pq} is constant for all samples (*i.e.*, for all values of q),

$$n_p = N_p \cdot n_{pq} \quad \dots \quad (2.2)$$

The *intra-class mean* (m_{pq}) and the *intra-class variance* (σ_{pq}^2) for the q^{th} sample in the p^{th} character are defined by:—

$$n_{pq} \cdot m_{pq} = S_t [(x_{pqt})] \quad \dots \quad (2.3)$$

$$n_{pq} \cdot \sigma_{pq}^2 = S_t [(x_{pqt} - m_{pq})^2] \quad \dots \quad (2.4)$$

where S_t is a summation for all individuals within the given sample, *i.e.*, for all values of t .

For the p^{th} character there will be N_p such means and N_p such variances, one pair for each of the N_p different samples.

The *inter-class means* (M_p) and the *inter-class variance* (s_p^2) for the p^{th} character are defined by:—

$$N_p \cdot M_p = S_q [(m_{pq})] \quad \dots \quad (2.5)$$

$$N_p \cdot s_p^2 = S_q [(m_{pq} - M_p)^2] \quad \dots \quad (2.6)$$

If all the individuals are pooled together for any particular character we shall get another set of means (m_p) and variance (Σ_p^2) defined by:—

$$n_p \cdot m_p = S_q [(n_{pq} \cdot m_{pq})] = S_q S_t [(x_{pqt})] \quad \dots \quad (2.7)$$

$$n_p \cdot \Sigma_p^2 = S_q S_t [(x_{pqt} - m_p)^2]. \quad \dots \quad (2.8).$$

Following a suggestion of Prof. Karl Pearson such means and variances may be called the "familial" means and variances.

Besides the above we may also define an *average intra-class* variance by:—

$$N_p \cdot \bar{\sigma}_p^2 = S_q [(\sigma_{pq}^2)]. \quad \dots \quad (2.9).$$

The mean, variance, etc., of the group (or population) from which a sample is drawn may be written as m_{pq} , $\bar{\sigma}_{pq}^2$, etc. When there is no chance of confusion, for example, for only two samples in any assigned character, we may drop the subscripts and write m and m' for the intra-class means, σ^2 and σ'^2 for the intra-class variances, n and n' for the size of the two samples, and \bar{m} and \bar{m}' for the two corresponding group-means.

I shall write dm , dm' , etc., everywhere for statistical differences (*i.e.*, deviations of individuals values from corresponding mean values).

II. TESTS OF DIVERGENCE

3. *Single character* ($P=1$). When n, n' are both large, (say greater than 25), it is often possible to use the normal (Gauss-Laplacian) distribution of deviations. It will be only necessary to calculate the statistics

$$x = (m - m') \sqrt{\frac{\sigma^2}{n} + \frac{\sigma'^2}{n'}} \quad \dots \quad (3.1)$$

and using a standard table of the probability integral (10, pp. 2-8)¹ calculate the probability of occurrence of a deviation equal to or greater than " x ."

But if the size of the group is small, (*e.g.*, when n and n' are less than 25), the method given by R. A. Fisher (2, p. 107) may be used with advantage, especially when there are reasons for believing that there is no significant difference in the variability of the two samples. Two statistics are calculated, one the "pooled" variance given by

$$s^2 = \frac{(n-1)\sigma^2 + (n'-1)\sigma'^2}{(n-1) + (n'-1)} \quad \dots \quad (3.2)$$

¹ The number within brackets refers to the list given at the end.

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¹ The number within brackets refers to the list given at the end.

and the other, the deviation

$$t = \left(\frac{m - m'}{s} \right) \sqrt{\frac{n \cdot n'}{n + n'}} \quad \dots \quad (3.3)$$

and the probability of occurrence of deviations as great or greater than " t " is obtained from tables given by Fisher (2, p. 139).

In other cases certain tests recently developed by J. Neyman and E. S. Pearson (8) may be used. The most convenient test in practice would probably be the P -test for which necessary tables have been supplied by the authors.

A general treatment of the problem is also possible which takes into consideration the nature of the frequency distribution as a whole, Pearson (11) has shown that if f_p and f'_p are the frequencies in corresponding cells for two samples (both of which are supposed to be random samples drawn from the same general population), of sizes n and n' respectively, then on the assumption that there is no correlation of deviations in frequencies between the first and the second group, the statistics

$$\chi^2 = S_p \left[\frac{n \cdot n' \left(\frac{f_p}{n} - \frac{f'_p}{n'} \right)^2}{(f_p + f'_p)} \right] \quad \dots \quad (3.4)$$

(where S_p denotes a summation for all p cells), may be used for obtaining the probability of occurrence of the given system of differences from standard tables (10, Table XII, p. 26).

4. *Multiple characters.* When the number of characters is more than one, the Pearsonian Coefficient of Racial Likeness furnishes the standard test of divergence.

$$C^2 = \frac{1}{P} S_p \left[\frac{(m_{pq} - m'_{pq})^2}{\left(\frac{\sigma_{pq}^2}{n_{pq}} + \frac{\sigma'_{pq}^2}{n'_{pq}} \right)} \right] - 1 \quad \dots \quad (4.0)$$

Where P is the total number of characters for which the summation is taken. This coefficient was first used by Miss M. L. Tildesley (14, p. 247) in 1921, and later on extensively by Dr. G. H. Morant (7) and others. Prof. Pearson (12) gave a full theoretical discussion in 1926.

If the two samples are both random samples drawn from the same general population, then the theoretical value of C^2 is given by

$$(C^2)_0 = 0 \pm .67449 \sqrt{\frac{2}{P}} \quad \dots \quad (4.1).$$

If C^2 differs significantly from zero then the two samples cannot be considered to be random samples drawn from the same population.

If we use a reliable constant value¹ of the intra-group variance σ_p^2 in the place of the observed values σ_{pq}^2 and $\sigma_{pq'}^2$, C^2 may be written as

$$C^2 = \frac{1}{P} S_p \left[\frac{(m_{pq} - m_{pq'})^2}{\sigma_p^2 \left(\frac{1}{n_{pq}} + \frac{1}{n_{pq'}} \right)} \right] - 1 \quad \dots \quad (4.01)$$

or

$$C^2 = \left(\frac{n \cdot n'}{n + n'} \right) \cdot \frac{1}{P} S_p \left[\frac{(m_{pq} - m_{pq'})^2}{\sigma_p^2} \right] - 1 \quad \dots \quad (4.02)$$

when the size of the samples is constant for all characters.

5. It will be noticed that C^2 is an adequate test of divergence only so far as group-means are concerned. It is obvious that two groups may agree in their means and yet be divergent in other characteristics such as variance, skewness or kurtosis. Separate tests of divergence for such other characteristics are therefore necessary, and may be easily constructed.

For example for testing divergence in variability we may use the following coefficient

$$E^2 = \frac{2}{P} S_p \left[\left(\frac{n_{pq} \cdot n_{pq'}}{n_{pq} + n_{pq'}} \right) \cdot \frac{(\sigma_{pq} - \sigma_{pq'})^2}{\sigma_p^2} \right] \quad \dots \quad (5.1).$$

Proceeding in the same way we can test the divergence in skewness or kurtosis with the help of the following coefficients G^2 and H^2 respectively.

$$G^2 = \frac{1}{P} S_p \left[\frac{(sk - sk')^2}{\Sigma sk^2 + \Sigma sk'^2} \right] - 1 \quad \dots \quad (5.2)$$

$$H^2 = \frac{1}{P} S_p \left[\frac{(\beta_2 - \beta_2')^2}{\Sigma \beta_2^2 + \Sigma \beta_2'^2} \right] - 1 \quad \dots \quad (5.3)$$

where sk , sk' the two skewness, with their variances Σsk^2 , $\Sigma sk'^2$, and β_2 , β_2' with the corresponding variances $\Sigma \beta_2^2$, $\Sigma \beta_2'^2$ can be easily obtained from equations and tables given by Pearson (10, Tables XXXV-XLVI, pp. 66-87).

When the two groups are random samples drawn from the same population, the mean values of E^2 , G^2 , and H^2 will be each equal to

$$(E^2, G^2, H^2) = 0 \pm .67449 \sqrt{\frac{2}{P}} \quad \dots \quad (5.4).$$

¹ An estimate based on a long series of measurements may be used for this purpose; or where the intra-class variance of a fairly large number of samples are known, an average value of the intra-class variance as defined by (2.9) can be easily calculated.

It is only when all these coefficients (in addition to C^2) are sensibly zero shall we be justified in asserting that there is no divergence between the two groups (up to the order of the 4th moment).

In actual practice it will be often difficult to use G^2 or H^2 as the estimates of the variances will usually be unreliable owing to the smallness of the size of the samples. It should, however, be possible to use E^2 in many cases. Numerical examples will be found in Part II of the present paper.

6. A more general discussion based on the method of paragraph 3 is theoretically possible. The two groups to be compared may be subdivided into a large number of cells in a P -dimensional manifold, and the frequencies in each cell may be used for the calculation of χ^2 defined by equation (3.4).

If $c_1, c_2, c_3, \dots, c_p, \dots$ are the number of sub-classes into which the 1st, the 2nd, the 3rd, ... the p th character is split up, then the total number of elementary cells will be given by $c_1 \cdot c_2 \cdot c_3 \cdot \dots \cdot c_p = c$.

If we use very broad categories, say only 4 divisions for each character, then $c_1 = c_2 = c_3 = \dots = c_p = 4$.

Thus $c = 4^P$, the total number of cells, will become very large even for small values of P , and hence it will become impracticable to use the present method in most cases.

III. MEASURES OF DIVERGENCE

7. The entity we have been calling "the amount of divergence between two groups" is a derived quantity, and is not given directly. A certain amount of choice exists in its precise formulation, and its exact significance will depend upon and will be determined by the particular mathematical formula by which we choose to define it.

If each sample is represented by a point in a P -dimensional manifold determined by P values of the means of P characters, what we obviously require is a suitable expression for an entity which may be called the generalised (P -dimensional) distance between any pair of such P -fold points. If all the characters were directly comparable, we could use the ordinary quadratic expression $S_p [(m_{pq} - m_{pq'})^2]$. But we are confronted with the difficulty that all the characters are not directly comparable.

The crux of the whole problem lies, therefore, in transforming the raw observed differences $(m_{pq} - m_{pq'})$ in such a way that they may all become directly comparable with one another. It is clear therefore that we must introduce suitable multipliers or "weights," so that a difference, say $(m_{1,q} - m_{1',q'})$ in one character will, in some defined sense, match or be equivalent to a corresponding $(m_{2,q} - m_{2',q'})$ in a second character.

Introducing k_p as a suitably selected multiplier, we obtain the general form for a measure of divergence in means:

$$U^2 = f \left(S_p \left[\frac{(m_{pq} - m_{pq}')^2}{k_p^2} \right] \right) \dots \dots \dots (7.0).$$

It will be convenient to choose k_p in such a way that it may satisfy the following conditions:—

(i) U^2 should be a pure number. This requires that k_p should have the same dimensions as m_{pq} or m_{pq}' .

(ii) U^2 should vanish when the samples are both random samples drawn from the same general population.

(iii) U^2 should be constant (within the limits of errors of random sampling) for two samples drawn from the same two differing groups or populations.

(iv) U^2 should increase (or decrease) as the system of differences ($m_{pq} - m_{pq}'$) increases (or decreases). For example, for 3 groups G_1 , G_2 , and G_3 , if it actually happens in practice that for all characters the differences in means between the 1st and the 2nd group, i.e., the quantities ($m_{p,1} - m_{p,2}$) are less than ($m_{p,1} - m_{p,3}$) the corresponding differences between the 1st and the 3rd group, then U_{12}^2 the divergence between G_1 and G_2 should be less than U_{13}^2 the divergence between G_1 and G_3 . This condition suggests that k_p should be kept invariable (for each character) for the same series of comparisons.

In choosing k_p we must be guided by empirical considerations; recourse to a method of trial and error is, therefore, inevitable. To this extent the choice of k_p is arbitrary, i.e., we are free (in fact we are obliged) to try different values of k_p , and see what kind of results emerge from each value of k_p so chosen. The ultimate choice, however, will be determined or (limited) by the actual facts of nature. For we must finally adopt that particular value of which will yield in practice a system of description possessing the greatest coherence, range, significance, and simplicity.

In the case of anthropology it is conceivable that genetic analysis may develop far enough in future to be able to furnish us with a reliable set of values of k_p for different characters. But for the present, restricting ourselves to purely statistical considerations, the choice of k_p would appear to lie among two groups of constants.

(a) We may choose one or other of the different measures of variation:—

- (i) the inter-class standard deviation (σ_p);
- (ii) the inter-class standard deviation (s_p); or,
- (iii) the familial standard deviation (Σ_p).

All the above quantities have the advantage that they can be determined with greater "efficiency" in the sense defined by

Fisher (3) than the absolute range,¹ the mean deviation, or one of the percentile differences. I have, therefore, confined my discussion to the three standard deviations.

(b) In the alternative we can use the inter-class mean M_p or the familial mean m_p . It is obvious that so far as anthropometry is concerned both would give practically the same results, as the difference between the two will in most cases be negligible in comparison with the magnitude of either.

8. Similar considerations will apply to the case of other group constants such as the variance, the skewness, or the kurtosis. In fact we can generalise equation (7.0), and write for any measure of divergence:

$$I^2 = f \left(S_p \left[\frac{(x_{pq} - x_{pq}')^2}{K_p^2} \right] \right) \dots \dots \dots (8.0)$$

where x_{pq} , x_{pq}' are corresponding values of the same statistical entity for q th and q' th samples respectively, and K_p^2 is a suitably chosen multiplier which does not involve either x_{pq} or x_{pq}' .

9. Before proceeding further it will be useful to obtain a few statistical formulæ connected with equation (8).

Let x , x' be the observed values of any particular statistics for two samples of size n and n' respectively. Let \bar{x} , \bar{x}' be the corresponding values of the same statistics for the two respective groups (or populations) from which the two samples are drawn.

We shall assume² that these "true" or "mean" values may be reached by taking the average of an indefinitely large number of samples. $\dots \dots \dots$ (A.1).

Let us write

$$z = (x - x'). \dots \dots \dots (9.0).$$

If \bar{z} is the "true" or "mean" values of z , (as defined above), and dz , dx , dx' are statistical deviations from the corresponding mean values, then we may write:

$$z = \bar{z} \left(1 + \frac{dz}{\bar{z}} \right) = \bar{x} \left[\left(1 + \frac{dx}{\bar{x}} \right) - \bar{x}' \left(1 + \frac{dx'}{\bar{x}'} \right) \right] \dots \dots (9.01).$$

Squaring we get

$$\bar{z}^2 \left(1 + 2 \frac{dz}{\bar{z}} + \frac{dz^2}{\bar{z}^2} \right) = \left[\bar{x} \left(1 + \frac{dx}{\bar{x}} \right) - \bar{x}' \left(1 + \frac{dx'}{\bar{x}'} \right) \right]^2 \dots (9.02).$$

We can easily find the mean value (\bar{z}) and (σ_z^2) the variance of z , if we make certain simple assumptions:—

¹ The "range" (being the difference in character between the largest and the smallest individuals of a sample) is not suitable owing to the fact that its value depends on the size of the sample. [See Refs. 9 and 16.]

² Assumptions are clearly indicated by separate serial numbers: (A.1), (A.2) etc.

(A·2). The distribution of (dx) and (dx') are both normal, so that summing and taking the average for a very large number of samples, and using $\{ \}$ brackets for writing such average values we have

$$\left. \begin{aligned} \{dx\} &= \{dx'\} = \{dx^3\} = \{dx^5\} = \dots \{dx^{2x+1}\} = 0 \\ \{dx^2\} &= \sigma_x^2, \{dx^4\} = 3\sigma_x^4, \{dx^6\} = 15\sigma_x^6, \{dx^8\} = 105\sigma_x^8, \text{etc.} \end{aligned} \right\} \text{(A·2)}$$

with a similar set of expressions for dx' where $\sigma_x^2, \sigma_{x'}^2$ are the variance of x and x' respectively.

(A·3). The deviations (dx) and (dx') are statistically independent, so that the product terms involving odd-powers will vanish, and product terms involving even-powers may be summed independently.

$$\left. \begin{aligned} \{dx \cdot dx'\} &= \{dx^2 \cdot dx'\} = \{dx \cdot dx'^2\} = \dots = 0 \\ \{dx^2 \cdot dx'^2\} &= \sigma_x^2 \cdot \sigma_{x'}^2, \{dx^4 \cdot dx'^2\} = 3\sigma_x^4 \cdot \sigma_{x'}^2, \\ \{dx^2 \cdot dx'^4\} &= 3\sigma_x^2 \cdot \sigma_{x'}^4, \text{etc.} \end{aligned} \right\} \dots \text{(A·3)}$$

Summing and taking the average for a very large number of samples for equations (9·01) and (9·02) we easily find

$$\bar{z} = (\bar{x} - \bar{x}') \quad \dots \quad \dots \quad \dots \quad (9·1)$$

$$\sigma_z^2 = \{dz^2\} = \sigma_x^2 + \sigma_{x'}^2 \quad \dots \quad \dots \quad (9·2).$$

Taking the cube, and higher powers of equation (9·01) it can be shown in the same way that all the odd moments vanish:—

$$\{dz^3\} = \{dz^5\} = \{dz^7\} = \dots = 0$$

and the even moments are the same as for a normal distribution:—

$$\{dz^4\} = 3\sigma_z^4, \{dz^6\} = 15\sigma_z^6, \{dz^8\} = 105\sigma_z^8, \{dz^{10}\} = 945\sigma_z^{10}, \text{etc.}$$

10. Let y be any other statistical quantity whose "true" or mean value is \bar{y} . We define a new quantity " a " by

$$a = \frac{(x - x')^2}{y^2} = \frac{z^2}{\bar{y}^2} \dots \dots \dots (10·0).$$

If \bar{a} is the mean value of a , and da, dz, dy are statistical deviation from corresponding mean values, we may write

$$a = \bar{a} \left(1 + \frac{da}{\bar{a}} \right) = \frac{\bar{z}^2 \left(1 + \frac{dz}{\bar{z}} \right)^2}{\bar{y}^2 \left(1 + \frac{dy}{\bar{y}} \right)^2} = a_0 \left(1 + \frac{dz}{\bar{z}} \right)^2 \cdot \left(1 + \frac{dy}{\bar{y}} \right)^{-2} \dots (10·1),$$

where

$$a_0 = \frac{\bar{z}^2}{\bar{y}^2} = \frac{(\bar{x} - \bar{x}')^2}{\bar{y}^2} \dots \dots \dots (10·01).$$

Taking the square, the cube and the 4th power of equation (10.01), we have

$$\begin{aligned} \bar{a}^2 \left(1 + 2 \frac{da}{\bar{a}} + \frac{da^2}{\bar{a}^2} \right) \\ = a_0^2 \left(1 + \frac{dz}{\bar{z}} \right)^4 \left(1 + \frac{dy}{\bar{y}} \right)^4 \quad \dots \quad (10.2) \end{aligned}$$

$$\begin{aligned} \bar{a}^3 \left(1 + 3 \frac{da}{\bar{a}} + 3 \frac{da^2}{\bar{a}^2} + \frac{da^3}{\bar{a}^3} \right) \\ = a_0^3 \left(1 + \frac{dz}{\bar{z}} \right)^6 \left(1 + \frac{dy}{\bar{y}} \right)^6 \quad \dots \quad (10.3) \end{aligned}$$

$$\begin{aligned} \bar{a}^4 \left(1 + 4 \frac{da}{\bar{a}} + 6 \frac{da^2}{\bar{a}^2} + 4 \frac{da^3}{\bar{a}^3} + \frac{da^4}{\bar{a}^4} \right) \\ = a_0^4 \left(1 + \frac{dz}{\bar{z}} \right)^8 \left(1 + \frac{dy}{\bar{y}} \right)^8 \quad \dots \quad (10.4). \end{aligned}$$

We now make two further assumptions:—

(A.4). The distribution of (y) is normal, so that

$$\left. \begin{aligned} \{dy\} = \{dy^3\} = \{dy^5\} = \dots = 0 \\ \{dy^2\} = \sigma_y^2, \{dy^4\} = 3\sigma_y^4, \{dy^6\} = 15\sigma_y^6, \text{ etc.} \end{aligned} \right\} \dots \quad (A.4).$$

(A.5). The deviations (dy) and (dz) are statistically independent. This is equivalent to the assumption that (dy) and (dx) , as also (dy) and (dx') are statistically independent.

$$\left. \begin{aligned} \{dz, dy\} = \{dz^2, dy\} = \{dz, dy^2\} = \dots = 0 \\ \{dz^2, dy^2\} = \sigma_z^2 \sigma_y^2, \{dz^4, dy^2\} = 3\sigma_z^4 \sigma_y^2, \text{ etc.} \end{aligned} \right\} \dots \quad (A.5).$$

We can now expand equations (10.1), (10.2), (10.3), and (10.4) in ascending powers of $\left(\frac{dz}{\bar{z}}\right)^2$ and $\left(\frac{dy}{\bar{y}}\right)^2$, since the odd powers will vanish on taking the average of an indefinitely large number of samples.

We shall write

$$v^2 = \frac{\sigma_x^2}{\bar{z}^2} = \frac{\sigma_x^2 + \sigma_x'^2}{(\bar{x} - \bar{x}')^2}, \quad w^2 = \frac{\sigma_y^2}{\bar{y}^2} \quad \dots \quad (10.5)$$

and assume that

$$v^2 < 1, w^2 < 1 \quad \dots \quad (A.6)$$

so that we may expand in ascending powers of v^2 and w^2 .

The moment coefficients of a may be written as usual:—

$$\{da\} = 0, \{da^2\} = \mu_2(a), \{da^3\} = \mu_3(a), \text{ and } \{da^4\} = \mu_4(a).$$

By straightforward algebra¹ we then obtain the following equations:—

$$\bar{a} = a_0(1 + v^2)(1 + 3w^2 + 15w^4 + 105w^6 + 945w^8 + 10,395w^{10}) \dots \dots \quad (10.6)$$

$$\mu_2(a) = 2a_0^2[v^2(2 + v^2)(1 + 12w^2 + 138w^4 + 1,740w^6 + 24,615w^8) + w^2(2 + 33w^2 + 480w^4 + 7,290w^6 + 120,330w^8)] \dots \dots \quad (10.71)$$

$$= 2a_0^2[2(v^2 + w^2) + (v^4 + 24v^2w^2 + 33w^4) + 12w^2(v^4 + 23v^2w^2 + 40w^4) + 6w^4(23v^4 + 580v^2w^2 + 1215w^4) + 10w^6(1,740v^4 + 4,923v^2w^2 + 12,033w^4)] \dots \dots \quad (10.72)$$

$$\mu_3(a) = 8a_0^3[v^4(3 + v^2) + 3w^4(3 + 111w^2 + 3,030w^4 + 76,950w^6) + 3v^2w^2(4 + 123w^2 + 2,833w^4 + 64,320w^6) + 3v^2w^2\{9v^2(3 + 62w^2) + 1,232w^4\} + 3v^4(3 + 62w^2)] \dots \dots \quad (10.81)$$

$$= 8a_0^3[3(v^4 + 4v^2w^2 + 3w^4) + (v^6 + 81v^4w^2 + 369v^2w^4 + 333w^6) + 9w^2(3v^6 + 186v^4w^2 + 961v^2w^4 + 1,010w^6) + 18w^4(31v^6 + 1,848v^4w^2 + 10,720v^2w^4 + 12,825w^6)] \dots \dots \quad (10.82)$$

$$\mu_4(a) = 12a_0^4[v^4(4 + 20v^2 + 5v^4) + w^4(4 + 340w^2 + 16,101w^4 + 619,560w^6) + 2v^2w^2\{2(2 + 145w^2 + 6,016w^4 + 206,556w^6) + v^2(130 + 4,833w^2 + 149,904w^4) + 8v^4(54 + 1,665w^2)\}] \dots \dots \quad (10.91)$$

$$= 12a_0^4[4(v^2 + w^2)^2 + 20(v^6 + 13v^4w^2 + 29v^2w^4 + 17w^6) + (5v^8 + 864v^6w^2 + 9,666v^4w^4 + 2,464v^2w^6 + 16,101w^8) + 24w^2(9v^8 + 1,110v^6w^2 + 12,492v^4w^4 + 34,426v^2w^6 + 25,815w^8)] \dots \dots \quad (10.92)$$

When y is constant, i.e. when $w_p^2 = 0$, (or in any case where the variance of y is negligibly small) we have

$$\begin{aligned} \bar{a} &= \frac{\bar{z}^2}{\bar{y}^2} \cdot (1 + v^2) = \frac{(\bar{x} - \bar{x}')^2}{\bar{y}^2} \cdot \left\{ 1 + \frac{\sigma_x^2 + \sigma_x'^2}{(\bar{x} - \bar{x}')^2} \right\} \\ &= \frac{(\bar{x} - \bar{x}')^2}{\bar{y}^2} + \frac{\sigma_x^2 + \sigma_x'^2}{\bar{y}^2} \dots \dots \dots \quad (10.63) \end{aligned}$$

$$\begin{aligned} \mu_2(a) &= 2 \frac{\bar{z}^4}{\bar{y}^4} \cdot v^2(2 + v^2) \\ &= 4 \frac{(\bar{x} - \bar{x}')^2}{\bar{y}^2} \cdot \frac{(\sigma_x^2 + \sigma_x'^2)}{\bar{y}^2} + 2 \frac{(\sigma_x^2 + \sigma_x'^2)^2}{\bar{y}^4} \dots \dots \dots \quad (10.73) \end{aligned}$$

¹ I am indebted to my pupil Mr. Ananda Chandra Ray for verifying some of the algebraic results.

$$\begin{aligned}\mu_3(a) &= 8 \frac{\bar{z}^6}{\bar{y}^6} \cdot v^4(3+v^2) \\ &= 24 \frac{(\bar{x}-\bar{x}')^2}{\bar{y}^2} \cdot \frac{(\sigma_x^2 + \sigma_{x'}^2)^2}{\bar{y}^2} + 8 \frac{(\sigma_x^2 + \sigma_{x'}^2)^3}{\bar{y}^6} \quad \dots \quad (10.83)\end{aligned}$$

$$\begin{aligned}\mu_4(a) &= 12 \frac{\bar{z}^8}{\bar{y}^8} \cdot v^4(4+20v^2+5v^4) \\ &= 48 \frac{(\bar{x}-\bar{x}')^4}{\bar{y}^4} \cdot \frac{(\sigma_x^2 + \sigma_{x'}^2)^2}{\bar{y}^4} + 360 \frac{(\bar{x}-\bar{x}')^2}{\bar{y}^2} \cdot \frac{(\sigma_x^2 + \sigma_{x'}^2)^3}{\bar{y}^6} \\ &\quad + 60 \frac{(\sigma_x^2 + \sigma_{x'}^2)^4}{\bar{y}^8} \quad \dots \quad \dots \quad (10.93)\end{aligned}$$

$$\text{Also } \beta_1 = \mu_3^2/\mu_2^3 = 8v^2(9 - \frac{1}{2}v^2 + \frac{1}{2}v^4 - \frac{1}{2}v^6) \quad \dots \quad (10.94)$$

$$\beta_2 = \mu_4/\mu_2^2 = 3(1 + 4v^2 - 3v^4 + 2v^6 - \frac{1}{4}v^8) \quad \dots \quad (10.95).$$

11. We now define

$$b = \frac{1}{P} S_p[a_1 + a_2 + \dots] = \frac{1}{P} S_p[a_p] \quad \dots \quad (11.0)$$

where $a_1, a_2, a_3, \dots, a_p$ are each defined by an equation of the type (10.0).

Writing $da_1, da_2, da_3, \dots, da_p, \dots$ and db as statistical deviations from the corresponding mean values $\bar{a}_1, \bar{a}_2, \dots, \bar{a}_p$, and \bar{b} respectively, we have

$$\bar{b} \left(1 + \frac{db}{\bar{b}} \right) = \frac{1}{P} S_p \left[\bar{a}_p \left(1 + \frac{da_p}{\bar{a}_p} \right) \right] \quad \dots \quad (11.01).$$

Taking the average value of an indefinitely large number of samples,

$$\bar{b} = \frac{1}{P} S_p[\bar{a}_p] \quad \dots \quad (11.1).$$

Squaring equation (11.01), we get

$$\begin{aligned}\bar{b}^2 \left(1 + 2 \frac{db}{\bar{b}} + \frac{db^2}{\bar{b}^2} \right) &= \frac{1}{P^2} S_p \left[\bar{a}_p^2 \left(1 + 2 \frac{da_p}{\bar{a}_p} + \frac{da_p^2}{\bar{a}_p^2} \right) \right] \\ &+ \frac{1}{P^2} S_p S_r \left[2 \bar{a}_p \cdot \bar{a}_r \left(1 + \frac{da_p}{\bar{a}_p} + \frac{da_r}{\bar{a}_r} + \frac{da_p}{\bar{a}_p} \cdot \frac{da_r}{\bar{a}_r} \right) \right] \dots \quad (11.02)\end{aligned}$$

where $S_p S_r$ denotes a summation for all pairs of values of p and r , ($p \neq r$).

We next assume that a 's are statistically independent, i.e., $(da_p), (da_r)$ are statistically independent for all values of p and r , so that

$$\begin{aligned}(p \neq r), \quad \{ da_p \cdot da_r \} &= \{ da_p^2 \cdot da_r \} = \dots = 0 \} \quad \dots \quad (A.7). \\ \{ da_p^2 \cdot da_r^2 \} &= \mu_2(a_p) \cdot \mu_2(a_r), \text{ etc.} \quad \dots\end{aligned}$$

Taking the average of an indefinitely large number of samples for equation (11.02), and writing $\mu_2(b)$ as the second moment-coefficient of b , we have

$$\bar{b}^2 + \mu_2(b) = \frac{1}{P^2} S_p[\bar{a}_p^2] + \frac{1}{P^2} S_p S_r[2\bar{a}_p \cdot \bar{a}_r] + \frac{1}{P^2} S_p[\mu_2(a_p)] \dots (11.021).$$

Eliminating \bar{b} with the help of equation (11.1) we obtain

$$\mu_2(b) = \frac{1}{P^2} S_p[\mu_2(a_p)] \dots \dots \dots (11.2).$$

Again taking the 3rd power of equation (11.01),

$$\begin{aligned} \bar{b}^3 \left(1 + 3 \frac{db}{\bar{b}} + 3 \frac{db^2}{\bar{b}^2} + \frac{db^3}{\bar{b}^3} \right) &= \frac{1}{P^3} S_p \left[\bar{a}_p^3 \left(1 + 3 \frac{da_p}{\bar{a}_p} + 3 \frac{da_p^2}{\bar{a}_p^2} \right. \right. \\ &\quad \left. \left. + \frac{da_p^3}{\bar{a}_p^3} \right) \right] + \frac{1}{P^3} S_p S_r \left[3\bar{a}_p^2 \cdot \bar{a}_r \left(1 + 2 \frac{da_p}{\bar{a}_p} + \frac{da_p^2}{\bar{a}_p^2} \right) \right. \\ &\quad \left. \left(1 + \frac{da_r}{\bar{a}_r} \right) \right] \dots \dots (11.03). \end{aligned}$$

Writing $\mu_3(b)$ as the 3rd moment-coefficient of b , and taking the average of an indefinitely large number of samples,

$$\begin{aligned} \bar{b}^3 + 3\bar{b} \cdot \mu_2(b) + \mu_3(b) &= \frac{1}{P^3} S_p[\bar{a}_p^3] + \frac{1}{P^3} S_p S_r[3\bar{a}_p^2 \cdot \bar{a}_r] \\ &\quad + \frac{1}{P^3} S[3\bar{a}_p \cdot \mu_2(a_r)] + \frac{1}{P^3} S_p S_r[3\bar{a}_p \cdot \mu_2(a_r)] \\ &\quad + \frac{1}{P^3} S_p[\mu_3(a_p)] \dots \dots (11.031). \end{aligned}$$

Using (11.1) and (11.2) we therefore obtain

$$\mu_3(b) = \frac{1}{P^3} S_p[\mu_3(a_p)] \dots \dots \dots (11.3).$$

Now taking the 4th power of (11.01),

$$\begin{aligned} \bar{b}^4 \left(1 + 4 \frac{db}{\bar{b}} + 6 \frac{db^2}{\bar{b}^2} + 4 \frac{db^3}{\bar{b}^3} + \frac{db^4}{\bar{b}^4} \right) &= \frac{1}{P^4} S_p \left[\bar{a}_p^4 \left(1 + 4 \frac{da_p}{\bar{a}_p} \right. \right. \\ &\quad \left. \left. + 6 \frac{da_p^2}{\bar{a}_p^2} + 4 \frac{da_p^3}{\bar{a}_p^3} + \frac{da_p^4}{\bar{a}_p^4} \right) \right] + \frac{1}{P^4} S_p S_r \left[4\bar{a}_p^3 \cdot \bar{a}_r \left(1 + 3 \frac{da_p}{\bar{a}_p} \right. \right. \\ &\quad \left. \left. + 3 \frac{da_p^2}{\bar{a}_p^2} + \frac{da_p^3}{\bar{a}_p^3} \right) \left(1 + \frac{da_r}{\bar{a}_r} \right) \right] + \frac{1}{P^4} S_p S_r \left[6\bar{a}_p^2 \cdot \bar{a}_r^2 \left(1 + 2 \frac{da_p}{\bar{a}_p} \right. \right. \\ &\quad \left. \left. + \frac{da_p^2}{\bar{a}_p^2} \right) \left(1 + 2 \frac{da_r}{\bar{a}_r} + \frac{da_r^2}{\bar{a}_r^2} \right) \right] \dots \dots (11.04). \end{aligned}$$

Writing $\mu_4(b)$ as the 4th moment-coefficient of b , taking average values, and eliminating (\bar{b}) , $\mu_2(b)$, and $\mu_3(b)$ with the help of (11.1), (11.2) and (11.3), we have finally

$$\mu_4(b) = \frac{1}{P^4} S_p[\mu_4(a_p)] + \frac{6}{P^4} S_p S_p[\mu_2(a_p) \cdot \mu_2(a_r)] \dots (11.4).$$

The above results could of course have been obtained from the more general formulæ given by Professor Tchouproff (13). For example noticing that his N is our P , and that his $\mu_4(N) = \mu_4(b)$ in our notation, we find from equation (8), p. 286 of his paper (13).

$$\mu_4(N) = \mu_4(b) = \mu_4(b) = \frac{3}{P^2} \cdot \mu^2[2, P] + \frac{1}{P^4} S_p[\mu_4(a_p) - 3\mu_2^2(a_p)]$$

Since in Tchouproff's notation,

$$\mu[2, P] = \frac{1}{P} S_p[\mu_2(a_p)]$$

it immediately follows that

$$\begin{aligned} \mu_4(b) &= \frac{3}{P^4} S_p[\mu_2^2(a_p)] + \frac{6}{P^4} S_p S_p[\mu_2(a_p) \cdot \mu_2(a_r)] \\ &\quad + \frac{1}{P^4} S_p[\mu_4(a_p) - 3\mu_2^2(a_p)] \\ &= \frac{6}{P^4} S_p S_p[\mu_2(a_p) \cdot \mu_2(a_r)] + \frac{1}{P^4} S_p[\mu_4(a_p)] \end{aligned}$$

which is identical with our equation (11.4).

12. To prevent confusion, we shall now restore the full notation, and write x_{pq} , x_{pq}' , \bar{x}_{pq} , \bar{x}_{pq}' as the observed and "true" (or mean) values of the statistics for the p th character and the q and the q' th sample respectively. We shall also write Σ_{pq}^2 , $\Sigma_{pq'}^2$ and Σy_p^2 as the variances of x_{pq} , x_{pq}' and \bar{y}_p .

Then $v_p^2 = \frac{\Sigma_{pq}^2 + \Sigma_{pq'}^2}{(\bar{x}_{pq} - \bar{x}_{pq'})^2}$, $w_p^2 = \frac{\Sigma y_p^2}{\bar{y}_p^2}$ (12.01).

If $\bar{y}_p = \bar{k}_p = \text{constant}$, we may put $w_p^2 = 0$, and obtain

$$\bar{b} = \frac{1}{P} S_p \left[\frac{(\bar{x}_{pq} - \bar{x}_{pq'})^2}{k_p^2} \right] + \frac{1}{P} S_p \left[\frac{(\Sigma_{pq}^2 + \Sigma_{pq'}^2)}{k_p^2} \right] \dots (12.1)$$

$$\begin{aligned} \mu_2(b) &= \frac{4}{P^2} S_p \left[\frac{(\bar{x}_{pq} - \bar{x}_{pq'})^2}{k_p^2} \cdot \frac{(\Sigma_{pq}^2 + \Sigma_{pq'}^2)}{k_p^2} \right] \\ &\quad + \frac{2}{P^2} S_p \left[\frac{(\Sigma_{pq}^2 + \Sigma_{pq'}^2)^2}{k_p^4} \right] \dots \dots (12.2) \end{aligned}$$

$$\begin{aligned} \mu_3(b) &= \frac{24}{P^3} S_p \left[\frac{(\bar{x}_{pq} - \bar{x}_{pq'})^2}{k_p^2} \cdot \frac{(\Sigma_{pq}^2 + \Sigma_{pq'}^2)^2}{k_p^4} \right] \\ &\quad + \frac{8}{P^3} S_p \left[\frac{(\Sigma_{pq}^2 + \Sigma_{pq'}^2)^3}{k_p^6} \right] \dots \dots (12.3) \end{aligned}$$

$$\begin{aligned}
\mu_4(b) = & \frac{48}{P^4} S_p \left[\frac{(\bar{x}_{pq} - \bar{x}_{pq}')^4}{k_p^4} \cdot \frac{(\sum_{pq}^2 + \sum_{pq'}^2)^2}{k_p^4} \right] \\
& + \frac{240}{P^4} S_p \left[\frac{(\bar{x}_{pq} - \bar{x}_{pq}')^2}{k_p^4} \cdot \frac{(\sum_{pq}^2 + \sum_{pq'}^2)^3}{k_p^6} \right] + \frac{60}{P^4} S_p \left[\frac{(\sum_{pq}^2 + \sum_{pq'}^2)^4}{k_p^8} \right] \\
& - \frac{6}{P^4} S_p S_r \left[\left\{ 4 \frac{(\bar{x}_{pq} + \bar{x}_{pq}')^2}{k_p^2} \cdot \frac{(\sum_{pq}^2 + \sum_{pq'}^2)}{k_p^2} \right. \right. \\
& + 2 \frac{(\sum_{pq}^2 + \sum_{pq'}^2)^2}{k_p^4} \left. \right\} \left\{ 4 \frac{(\bar{x}_{rq} + \bar{x}_{rq}')^2}{k_r^2} \cdot \frac{(\sum_{rq}^2 + \sum_{rq'}^2)}{k_r^2} \right. \\
& \left. \left. + 2 \frac{(\sum_{rq}^2 + \sum_{rq'}^2)^2}{k_r^4} \right\} \right] \dots \dots \dots (12.4).
\end{aligned}$$

13. When the two samples are drawn from the same group or population $(\bar{x}_{pq} - \bar{x}_{pq}') = 0$ for all values of p .

The mean value (\bar{b}) will not however vanish. We therefore introduce a small correcting term¹ and define any measure of group divergence by the general formula:—

$$U^2 = \frac{1}{P} S_p \left[\frac{(\bar{x}_{pq} - \bar{x}_{pq}')^2}{k_p^2} \right] - \frac{1}{P} S_p \left[\frac{(\sum_{pq}^2 + \sum_{pq'}^2)}{k_p^2} \right] \dots (13.0)$$

so that the mean value of U^2 is given by

$$\bar{U}^2 = \frac{1}{P} S_p \left[\frac{(\bar{x}_{pq} - \bar{x}_{pq}')^2}{k_p^2} \right] \dots \dots \dots (13.1).$$

It will be noticed that $\bar{U}^2 = 0$, when $(\bar{x}_{pq} - \bar{x}_{pq}') = 0$ for all values of p , i.e., for two samples drawn from the same group or population.

The variance and the other moment coefficient for U^2 will of course be the same as those for " b ", and will be given by equations (11.1)–(11.4) or by equations (12.1)–(12.4) as the case may be.

¹ It is true that equation (13.0) may sometimes give a negative value of U^2 (or what amounts to the same thing, an imaginary value for U , the generalised distance between the two groups). It will be noticed, however, that the correcting term $\frac{1}{P} S_p \left[\frac{(\sum_{pq}^2 + \sum_{pq'}^2)}{k_p^2} \right]$ is a quantity of the order of errors of random sampling, so that a negative value of U^2 will occur only when the observed value of the divergence is of the order of (or smaller than) the errors of random sampling. The statistical implication is obvious; in such cases the divergence must be treated as imaginary, i.e., non-significant. It will be remembered that C^2 , the Pearsonian Coefficient of Racial Likeness, will also (in similar circumstances) sometimes assume negative values.

IV. A COEFFICIENT OF DIVERGENCE IN MEANS

14. We may now proceed to construct different coefficients of divergence by substituting suitable values for x_{pq} , x_{pq}' , and k_p in equation (13.0).

Let us put

$$x_{pq} = m_{pq}, \quad x_{pq}' = m_{pq}', \quad \text{and} \quad k_p^2 = \bar{\sigma}_p^2 \quad \dots \quad (14.01)$$

where $\bar{\sigma}_p^2$ is a reliable constant value of the variance for the p th character.¹ If the size of the two samples are n_{pq} , n_{pq}' respectively, then (neglecting differences in variability between the two groups) we may write

$$\Sigma_{pq}^2 = \frac{\bar{\sigma}_p^2}{n_{pq}}, \quad \Sigma_{pq'}^2 = \frac{\bar{\sigma}_p^2}{n_{pq'}} \quad \dots \quad (14.02)$$

$$\text{and} \quad v_p^2 = \frac{\bar{\sigma}_p^2 \left(\frac{1}{n_{pq}} + \frac{1}{n_{pq'}} \right)}{(\bar{m}_{pq} - \bar{m}_{pq'})^2}, \quad w_p^2 = 0 \quad \dots \quad (14.03).$$

Calling this particular coefficient D^2 , we have

$$D^2 = \frac{1}{P} S_p \left[\frac{(m_{pq} - m_{pq'})^2}{\bar{\sigma}_p^2} \right] - \frac{1}{P} S_p \left[\left(\frac{1}{n_{pq}} + \frac{1}{n_{pq'}} \right) \right] \quad \dots \quad (14.04).$$

With mean value

$$\bar{D}^2 = \frac{1}{P} S_p \left[\frac{(\bar{m}_{pq} - \bar{m}_{pq'})^2}{\bar{\sigma}_p^2} \right] \quad \dots \quad (14.1)$$

$$\begin{aligned} \mu_2(D^2) = \frac{4}{P^2} S_p \left[\frac{(\bar{m}_{pq} - \bar{m}_{pq'})^2}{\bar{\sigma}_p^2} \cdot \left(\frac{1}{n_{pq}} + \frac{1}{n_{pq'}} \right) \right] \\ + \frac{2}{P^2} S_p \left[\left(\frac{1}{n_{pq}} + \frac{1}{n_{pq'}} \right)^2 \right] \quad \dots \quad (14.2) \end{aligned}$$

$$\begin{aligned} \mu_3(D^2) = \frac{24}{P^3} S_p \left[\frac{(\bar{m}_{pq} - \bar{m}_{pq'})}{\bar{\sigma}_p^2} \cdot \left(\frac{1}{n_{pq}} + \frac{1}{n_{pq'}} \right)^2 \right] \\ + \frac{8}{P^3} S_p \left[\left(\frac{1}{n_{pq}} + \frac{1}{n_{pq'}} \right)^3 \right] \quad \dots \quad (14.3) \end{aligned}$$

¹ This constant value of $\bar{\sigma}_p^2$ may be taken from a very long series of measurements, or the average value of a fairly large number of estimates based on smaller samples may be used with advantage.

$$\begin{aligned}
\mu^4(D^2) = & \frac{48}{P^4} S_p \left[\frac{(\bar{m}_{pq} - \bar{m}_{pq}')^4}{\bar{\sigma}_p^4} \left(\frac{1}{n_{pq}} + \frac{1}{n_{pq}'} \right)^2 \right] \\
& + \frac{240}{P^4} S_p \left[\frac{(\bar{m}_{pq} - \bar{m}_{pq}')^2}{\bar{\sigma}_p^2} \cdot \left(\frac{1}{n_{pq}} + \frac{1}{n_{pq}'} \right)^3 \right] \\
& + \frac{60}{P^4} S_p \left[\left(\frac{1}{n_{pq}} + \frac{1}{n_{pq}'} \right)^4 \right] \\
& + \frac{6}{P^4} S_p S_r \left[\left\{ 4 \frac{(\bar{m}_{pq} - \bar{m}_{pq}')^2}{\bar{\sigma}_p^2} \cdot \left(\frac{1}{n_{pq}} + \frac{1}{n_{pq}'} \right) \right. \right. \\
& \left. \left. + 2 \left(\frac{1}{n_{pq}} + \frac{1}{n_{pq}'} \right)^2 \right\} \left\{ 4 \frac{(\bar{m}_{rq} - \bar{m}_{rq}')^2}{\bar{\sigma}_r^2} \cdot \left(\frac{1}{n_{rq}} + \frac{1}{n_{rq}'} \right) \right. \right. \\
& \left. \left. + 2 \left(\frac{1}{n_{rq}} + \frac{1}{n_{rq}'} \right)^2 \right\} \right] \dots \quad (14.4)
\end{aligned}$$

where $S_p S_r$ denotes a summation for all possible pairs of values of p and r , ($p \neq r$).

15. If the size of the sample remains constant for all characters, i.e., $n_{pq} = n_{rq} = \dots n_q$, and $n_{pq}' = n_{rq}' = \dots n_q'$, and we write,

$$\frac{2}{n_q} = \left(\frac{1}{n_q} + \frac{1}{n_q'} \right) \dots \dots \dots (15.01)$$

then the above formulæ take a much simpler form.

Let us write

$$(\bar{d}_p^2) = \frac{(\bar{m}_{pq} - \bar{m}_{pq}')^2}{\bar{\sigma}_p^2}, \quad v_p^2 = \frac{1}{\bar{d}_p^2} \cdot \frac{2}{\bar{n}_q} \dots \dots (15.02)$$

and substitute these values in equations (10.61)-(10.91).

Then

$$\bar{\alpha}_p = (\bar{d}_p^2) + \frac{2}{\bar{n}_q} \dots \dots \dots (15.1)$$

$$\mu_2(\alpha_p) = \frac{8}{\bar{n}_q} \left(\bar{d}_p^2 + \frac{1}{\bar{n}_q} \right) \dots \dots \dots (15.2)$$

$$\mu_3(\alpha_p) = \frac{32}{\bar{n}_q^2} \left(3 \bar{d}_p^2 + \frac{2}{\bar{n}_q} \right) \dots \dots \dots (15.3)$$

$$\mu_4(\alpha_p) = \frac{192}{\bar{n}_q^2} \left((\bar{d}_p^2)^2 + 10 \frac{\bar{d}_p^2}{\bar{n}_q} + \frac{5}{\bar{n}_q^2} \right) \dots \dots \dots (15.4)$$

Substituting these values in equations (11.1) to (11.4) we get

$$\bar{b} = \frac{1}{P} S_p [(\bar{d}_p^2)] + \frac{2}{\bar{n}_q} \dots \dots \dots (15.5)$$

$$\mu_2(b) = \frac{1}{P^2} S_p \left[\frac{8}{\bar{n}_q} \left(\bar{d}_p^2 + \frac{1}{\bar{n}_q} \right) \right] \dots \dots \dots (15.6)$$

$$\mu_3(b) = \frac{1}{P^3} S_p \left[\frac{32}{\bar{n}_q^2} \left(3 \left(\bar{d}_p^2 \right) + \frac{2}{\bar{n}_q} \right) \right] \dots \dots \dots (15.7).$$

Also choosing Tchouproff's form for $\mu_4(b)$, we have

$$\mu_4(b) = \frac{3}{P^2} \left\{ \frac{1}{P} S_p [\mu_2(a_p)] \right\}^2 + \frac{1}{P^4} S_p [\mu_4(a_p) - 3\mu_2^2(a_p)]$$

$$\text{Writing } \bar{D}^2 = \frac{1}{P} S_p [(\bar{d}_p^2)] \dots \dots \dots (15.03)$$

we notice that

$$\begin{aligned} \left\{ \frac{1}{P} S_p [\mu_2(a_p)] \right\}^2 &= \left\{ \frac{1}{P} S_p \left[\frac{8}{\bar{n}_q} \left(\bar{d}_p^2 + \frac{1}{\bar{n}_q} \right) \right] \right\}^2 = \left\{ \frac{8}{\bar{n}_q} \left(\bar{D}^2 + \frac{1}{\bar{n}_q} \right) \right\}^2 \\ &= \frac{64}{\bar{n}_q^2} \cdot \left\{ (\bar{D}^2) + \frac{1}{\bar{n}_q} \right\}^2. \end{aligned}$$

Again

$$\begin{aligned} \mu_4(a_p) - 3\mu_2^2(a_p) &= \frac{192}{\bar{n}_q^2} \left\{ (\bar{d}_p^2)^2 + 10 \frac{\bar{d}_p^2}{\bar{n}_q} + \frac{5}{\bar{n}_q^2} \right\} \\ &\quad - 3 \left\{ \frac{8}{\bar{n}_q} \left(\bar{d}_p^2 + \frac{1}{\bar{n}_q} \right) \right\}^2 \\ &= \frac{192 \times 4}{\bar{n}_q^3} \left\{ 2 \left(\bar{d}_p^2 \right) + \frac{1}{\bar{n}_q} \right\} \end{aligned}$$

Therefore

$$\begin{aligned} \frac{1}{P^4} S_p [\mu_4(a_p) - 3\mu_2^2(a_p)] &= \frac{1}{P^4} S_p \left[\frac{192 \times 4}{\bar{n}_q^3} \left\{ 2 \left(\bar{d}_p^2 \right) + \frac{1}{\bar{n}_q} \right\} \right] \\ &\quad \parallel \frac{192 \times 4}{P^3 \cdot \bar{n}_q^3} \left[2(\bar{D}^2) + \frac{1}{\bar{n}_q} \right]. \end{aligned}$$

Thus

$$\begin{aligned} \mu_4(b) &= \frac{3 \times 64}{P^2 \cdot \bar{n}_q^2} \left\{ (\bar{D}^2) + \frac{1}{\bar{n}_q} \right\}^2 + \frac{192 \times 4}{P^3 \cdot \bar{n}_q^3} \left\{ 2(\bar{D}^2) + \frac{1}{\bar{n}_q} \right\} \\ &= \frac{192}{P^2 \cdot \bar{n}_q^2} \cdot \left[\left\{ (\bar{D}^2) + \frac{1}{\bar{n}_q} \right\}^2 + \frac{4}{P \cdot \bar{n}_q} \left\{ 2(\bar{D}^2) + \frac{1}{\bar{n}_q} \right\} \right] \dots (15.8). \end{aligned}$$

16. We may now sum up our results for the coefficient D^2 defined by

$$D^2 = \frac{1}{P} S_p \left[\frac{(m_{pq} - m_{pq'})^2}{\bar{\sigma}_p^2} \right] - \frac{2}{\bar{n}_q} \dots \dots (16.0).$$

The mean value is given by

$$(\bar{D}^2) = \frac{1}{P} S_p \left[\frac{\bar{m}_{pq} - \bar{m}_{pq'}}{\bar{\sigma}_p^2} \right] \dots \dots (16.1).$$

Writing $\delta \equiv (\bar{n}_q, \bar{D}^2) \dots \dots \dots (16.11)$

we have $\mu_2(D^2) = \frac{8}{P \cdot \bar{n}_q} \left[(\bar{D}^2) + \frac{1}{\bar{n}_q} \right] = \frac{8(\delta+1)}{P \cdot \bar{n}_q^2} \dots \dots (16.2)$

$$\mu_3(D^2) = \frac{32}{P^2 \cdot \bar{n}_q^2} \left[3(\bar{D}^2) + \frac{1}{\bar{n}_q} \right] = \frac{32(3\delta+2)}{P^2 \cdot \bar{n}_q^3} \dots (16.3)$$

$$\begin{aligned} \mu_4(D^2) &= \frac{192}{P^2 \cdot \bar{n}_q^2} \left[\left\{ (\bar{D}^2) + \frac{2}{\bar{n}_q} \right\}^2 + \frac{4}{P \cdot \bar{n}_q} \left\{ 2(\bar{D}^2) + \frac{1}{\bar{n}_q} \right\} \right] \\ &= \frac{192}{P^2 \cdot \bar{n}_q^4} \left[(\delta+1)^2 + \frac{4}{P} (2\delta+1) \right] \dots \dots (16.4) \end{aligned}$$

$$\beta_1 = \frac{2}{P} \frac{\left\{ 3(\bar{D}^2) + \frac{2}{\bar{n}_q} \right\}^2}{\left\{ (\bar{D}^2) + \frac{1}{\bar{n}_q} \right\}^3} = \frac{2}{P} \cdot \frac{(3\delta+2)^2}{(\delta+1)^3} \dots \dots (16.5)$$

$$\begin{aligned} \beta_2 &= \frac{3 \left[\left\{ (\bar{D}^2) + \frac{1}{\bar{n}_q} \right\}^2 + \frac{4}{P \cdot \bar{n}_q} \left\{ 2(\bar{D}^2) + \frac{1}{\bar{n}_q} \right\} \right]}{\left\{ (\bar{D}^2) + \frac{1}{\bar{n}_q} \right\}^2} \\ &= 3 + \frac{12(2\delta+1)}{P(\delta+1)^2} = 3 + \frac{12\delta^2+18\delta+6}{9\delta^2+12\delta+4} \cdot \beta_1 \dots \dots (16.6). \end{aligned}$$

Even when the size of the samples is not absolutely constant, the above formulæ may still be used without appreciable error if the fluctuation in the size of the sample is small, and we write

$$\frac{2}{\bar{n}_q} = \frac{1}{P} S_p \left[\left(\frac{1}{n_{pq}} + \frac{1}{n_{pq}'} \right) \right] \dots \dots (16.7).$$

Further when the magnitude of (D^2) is of the order of, or greater than $\frac{10}{\bar{n}_q}$, it will usually be possible to neglect even large fluctuations in the size of the sample and use a mean value of (\bar{n}_q) as defined in equation (16.7).

Finally when the two samples are drawn from the same population $(\bar{D}^2=0)$, we have

$$(\bar{D}^2)_0 = 0 \pm .67449 \cdot \frac{2}{\bar{n}_q} \sqrt{\frac{2}{P}} \dots \dots (16.8).$$

17. Since the standard deviation of (D^2)

$$= \frac{1}{\bar{n}_q} \sqrt{\frac{8(\delta+1)}{P}}$$

we notice that the ratio

$$\frac{\text{Value of } D^2}{\text{Standard deviation of } D^2} = \frac{\delta}{\bar{n}_q} \cdot \bar{n}_q \sqrt{\frac{P}{8(\delta+1)}} \\ = \sqrt{\frac{P \cdot \delta^2}{8(\delta+1)}} = e \dots (17.1).$$

For any assigned value of e , that is for any given standard of statistical significance, the above equation furnishes a numerical relation between P and $\delta (= \bar{n}_q \cdot \bar{D}^2)$.

For example, if we decide to consider D^2 to be significantly different from zero when the numerical value of D^2 exceeds 2.5 times the standard deviations of D^2 , that is if we fix the level of significance at $e=2.5$ (which corresponds roughly to odds of 80 to 1 in the case of a normal distribution), we get

$$P = \frac{50(\delta+1)}{\delta^2} \dots \dots \dots (17.2).$$

For moderately large values of δ , P is approximately equal to $50/\delta$, or $P \cdot \delta = P \cdot \bar{n}_q \cdot \bar{D}^2 = 50$ approximately.

For any given value of P , equation (17.2) may also be used to determine the lower limit of δ for which divergence can be asserted with safety. For example for $P=1$, δ must be greater than 50; for $P=10$, δ must be greater than 6; and for $P=20$, δ must not be less than 3. In usual anthropological practice it will not be often possible to increase P beyond 20, and almost never beyond 100. We conclude therefore that even under the most favourable circumstances ($P=100$ or more) the size of the sample (\bar{n}_q) must be large enough to yield a value of δ greater than 1, while usually (for $P=20$ approximately) the value of δ must be greater than 3 or 4.

18. We may now investigate the nature of the frequency distribution of (D^2).

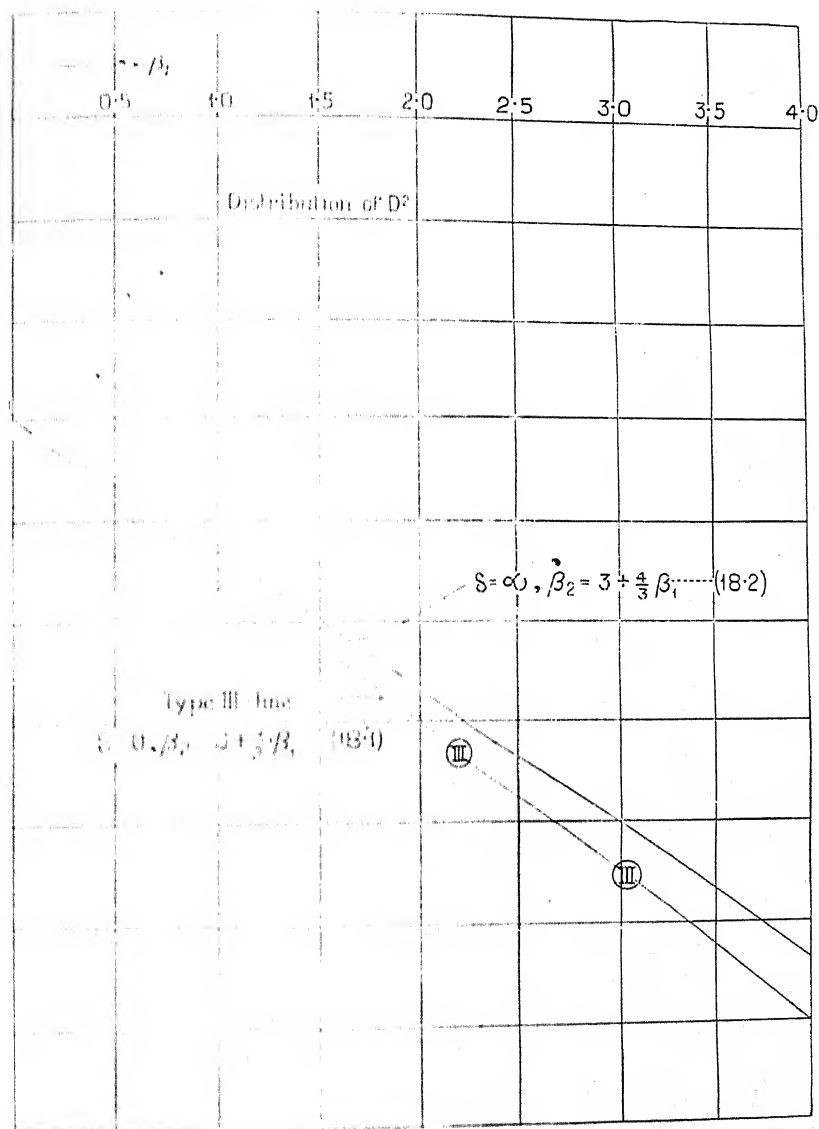
$$\text{For } \delta=0, \beta_2=3+\frac{1}{2}\beta_1 \dots \dots \dots (18.1).$$

The Pearsonian criterion $k_1=(6+3\beta_1-2\beta_2)=0$, and the distribution will belong to Type III of the Pearsonian family of curves.

$$\text{Again for } \delta=\infty, \beta_2=3+\frac{1}{3}\beta_1 \dots \dots \dots (18.2).$$

It will be easily seen from the accompanying sketch that equation (18.2) gives a straight line lying wholly in the Type I region on the $\beta_2-\beta_1$ diagram.

We conclude therefore that the distribution of D^2 will conform generally to Type I of the Pearsonian family, except in the case of two groups (or samples) taken from the same population, when the distribution will pass into the Type III curve.



19. When $\delta = \overline{D^2} = 0$, i.e., the two samples belong to the same population, we have (1, p. 90)

$$\left. \begin{aligned} D^2 = 0, \mu_2 = \frac{8}{P \cdot \bar{n}_q^2}, \mu_3 = \frac{64}{P^2 \cdot \bar{n}_q^3}, \mu_4 = \frac{192}{P^2 \cdot \bar{n}_q^4} \left(1 + \frac{4}{P}\right) \\ \beta_1 = \frac{8}{P}, \beta_2 = 3 + \frac{12}{P} \end{aligned} \right\} \dots (19.1).$$

The equation to the frequency curve is given by

$$y = y_0 \cdot e^{-\frac{px}{a}} \cdot \left(1 + \frac{x}{a}\right)^p \text{ with origin at mode} \quad \dots (19.2)$$

$$\text{where } p = \frac{4}{\beta_1} - 1 = \frac{P}{2} - 1,$$

$$a = \frac{2\mu_2^2}{\mu_3} - \frac{\mu_3}{2\mu_2} = \frac{2}{\bar{n}_q} \left(1 - \frac{2}{P}\right)$$

$$y_0 = \frac{N}{a} \cdot \frac{p^{(p+1)}}{e^p \cdot \Gamma(p+1)} \quad \dots (19.3).$$

$$\text{Mode - Mean} = -\frac{1}{2} \frac{\mu_3}{\mu_2^2} = -\frac{4}{P \bar{n}_q}$$

$$\text{Start of the curve} = \{\text{Mode} - "a"\} = -\frac{2}{\bar{n}_q}.$$

When δ is small in comparison with 1, i.e., the two samples belong to closely associated groups, we may still use a Type III curve without serious error. In ascending power of δ we have

$$\beta_1 = \frac{8}{P} (1 - \frac{3}{4}\delta^2 + \frac{5}{4}\delta^3 - \frac{3}{2}\delta^4)$$

$$\beta_2 = 3 + \frac{12}{P} (1 - \delta^2 + 2\delta^3 - 3\delta^4)$$

$$p = \frac{P}{2} (1 + \frac{3}{4}\delta^2 - \frac{5}{4}\delta^3 + \frac{3}{16}\delta^4) - 1$$

$$a = \frac{2}{\bar{n}_q} (1 + \frac{1}{2}\delta + \frac{1}{4}\delta^2 - \frac{3}{8}\delta^3 + \frac{9}{16}\delta^4) \quad \dots (19.4).$$

$$- \frac{4}{P \cdot \bar{n}_q} (1 + \frac{1}{2}\delta - \frac{1}{2}\delta^2 + \frac{1}{2}\delta^3 - \frac{1}{2}\delta^4)$$

$$\text{Mode - Mean} = -\frac{4}{P \cdot \bar{n}_q} (1 + \frac{1}{2}\delta - \frac{1}{2}\delta^2 + \frac{1}{2}\delta^3 - \frac{1}{2}\delta^4)$$

$$\text{Start of the curve} = -\frac{2}{\bar{n}_q} (1 + \frac{1}{4}\delta^2 - \frac{3}{8}\delta^3 + \frac{9}{16}\delta^4)$$

When δ is significantly different from zero, we have a Type I curve defined by (1. p. 54):—

$$y = y_0 \left(1 + \frac{x}{a_1}\right)^{m_1} \cdot \left(1 + \frac{x}{a_2}\right)^{m_2} \quad \dots \quad (19.5)$$

where the frequency constants are given by the following equations.

$$\text{Let } r = \frac{6(\beta_2 - \beta_1 - 1)}{6 + 3\beta_1 - 2\beta_2} = \left\{6 + \frac{4(3\delta + 1)}{\delta^2}\right\} + \frac{2(\delta + 1)^3}{\delta^2} \cdot P \dots (19.61)$$

$$\text{and } q^2 = 16(r + 1) + \beta_1(r + 2)^2$$

$$= \left[\frac{8(\delta + 1)^3(13\delta^2 + 12\delta + 4)}{\delta^4} \cdot P + \left\{ 688 + \frac{32(57\delta^3 + 55 \cdot \delta^2 + 24\delta + 4)}{\delta^4} \right\} + \frac{32(3\delta + 2)^2(4\delta^4 + 12\delta^3 + 13\delta^2 + 6\delta + 1)}{(\delta + 1)^3 \cdot \delta^4 \cdot P} \right] \dots (19.62).$$

$$\left. \begin{aligned} \text{Then } a_1 + a_2 &= \frac{1}{2} q \sqrt{\mu_2}, \quad \frac{m_1}{a_1} = \frac{m_2}{a_2} \\ (m_1, m_2) &= \frac{1}{2}(r - 2) + \frac{1}{2} \frac{r(r - 2)}{q} \sqrt{\beta_1} \\ y_0 &= \frac{N}{(a_1 + a_2)} \cdot \frac{(m_1)^{m_1} \cdot (m_2)^{m_2}}{(m_1 + m_2)^{m_1 + m_2}} \cdot \frac{\Gamma(m_1 + m_2 + 2)}{\Gamma(m_1 + 1)\Gamma(m_2 + 1)} \\ \text{Mode - Mean} &= -\frac{1}{2} \frac{\mu^3}{\mu^2} \cdot \left(\frac{r + 2}{r - 2} \right) \end{aligned} \right\} \dots (19.7).$$

When δ is large in comparison with 1, expanding in powers of $\left(\frac{1}{\delta}\right)$.

$$\left. \begin{aligned} \beta_1 &= \frac{18}{P \cdot \delta} \left\{ 1 - \frac{5}{3} \left(\frac{1}{\delta}\right) + \frac{22}{9} \left(\frac{1}{\delta}\right)^2 - \frac{10}{3} \left(\frac{1}{\delta}\right)^3 + \frac{13}{3} \left(\frac{1}{\delta}\right)^4 \right\} \\ \beta_2 &= 3 + \frac{24}{P \cdot \delta} \left\{ 1 - \frac{3}{2} \left(\frac{1}{\delta}\right) \right\} \left[1 - \left(\frac{41}{3\delta}\right) + \frac{5}{3} \left(\frac{1}{\delta}\right)^2 - \frac{6}{3} \left(\frac{1}{\delta}\right)^3 \right] \\ r &= \left\{ 6 + 12 \left(\frac{1}{\delta}\right) + 4 \left(\frac{1}{\delta}\right)^2 \right\} + 2 \left\{ (\delta + 3) + 3 \left(\frac{1}{\delta}\right) + \left(\frac{1}{\delta}\right)^2 \right\} \cdot P \end{aligned} \right\} \dots (19.8).$$

V. RESULTS OF SAMPLING EXPERIMENTS

20. I give below the results of a few sampling experiments which were undertaken to test the above formulae.

Remembering that the original material (from which the samples were drawn) was supposed to obey the normal law of frequency, we can use a table of the probability integral (Biometric Table II, pp. 2-9) together with Tippett's "Random Sampling Numbers" (Tracts for Computers No. XV) in the manner described in illustration I, page (iv) of the above tract, to form samples from a normal population. Using 11 sheets (Nos. 1, and 16-25 of the above tract), $11 \times 400 = 4,400$ individual random samples from a normal population were obtained. Combining 5 such samples at a time, $11 \times 80 = 880$ independent samples of the mean of 5 individuals were next calculated. Combining these 880 values in different ways and subtracting, 4000 sampled values of $(m - m')$, (or rather of $(m - m')/\sigma$, since the sampled values were all expressed in terms of their standard deviation) were obtained. Squaring such differences, I finally obtained 4000 sampled values of $\frac{(m - m')^2}{\sigma^2}$.

Taking them separately we have obviously a sample of 4000 values of D^2 with $\bar{n}_q = 5$, $P = 1$, and $\bar{D}^2 = 0$, (on the assumption that all the samples are truly random¹). Again adding them up in batches of 5, 10, and 20, I obtained samples of size $N = 800, 400, 200$, and $P = 5, 10, 20$ respectively. The sampled values were then grouped, and the frequency constants calculated in the usual way. The actual mean value was calculated by direct addition (without grouping) in order to keep it free from errors due to grouping. The mean value obtained from the grouped figures have been given within a square bracket only for purposes of comparison.

For $\bar{D}^2 = 0$, $\bar{n}_q = 5$, we have

$$\mu_2 = \frac{0.32}{P}, \mu_3 = \frac{0.512}{P^2}, \mu_4 = \frac{0.3072}{P^2} \left(1 + \frac{4}{P}\right) \left\{ \begin{array}{l} \beta_1 = \frac{8}{P}, \beta_2 = 3 \left(1 + \frac{4}{P}\right), \text{Mode} - \text{mean} = -\frac{0.8}{P} \end{array} \right\} \dots \dots (20.1)$$

$$(1) P=1, \quad \bar{n}_q=5, \quad \bar{D}^2=0, \quad \beta_1=8, \quad \beta_2=15, \quad N=4000, \\ \chi_1=.010665.$$

¹ On more careful consideration I am inclined to think that this assumption was not strictly fulfilled in my experiments, for the reason that only 880 independent values of m (or m') were used to obtain 4000 values of $(m - m')$ so that a certain amount of repetition was inevitable. This point has been further discussed for $\bar{n}_q = 20$.

Using equations (lii), (liii), and (liv) on page lxi of the Introduction to the Tables for Statisticians (10), I find

$$\beta_1=272, \beta_4=755, \beta_5=19, 752, \beta_6=74, 417.$$

Using equations (lxxv) and (lxxv bis) on p. lxxv of the same Introduction we get

$$\sqrt{N}\Sigma\beta_1=78.97, \sqrt{N}\Sigma\beta_2=205.6.$$

Again using the same values of the β -constants in equation (27) of Kazutaro Yasukawa's paper "On the Probable Error of the Mode of Skew Frequency Distribution" (17, p. 266) I found $B_1=-125.18$, $B_2=-7.6$, $B_3=+19.6$, and $B_4=-1.9$. Substituting these values in equation (29) of the same paper I obtained the ratio of the probable error of the mode to the probable error of the mean=163 approximately.

TABLE 1

Statistics	Expected	Observed	Difference
Mean	0	+0.0208	0.0208 \pm 0.0060
Mode - Mean	-0.8	-0.7470	0.0530 \pm 0.0034
ρ_2	0.32	0.3158	0.0042 \pm 0.0128
β_1	8.00	7.0675	0.9325 \pm 0.8421
β_2	15.00	12.6000	2.4000 \pm 2.0574

The probable error was of course calculated from the expected value of the constant in each case. A glance at column 4 will show that agreement between expected and observed values is quite satisfactory.

(2) $P=5$, $n_1=5$, $I^2=0$, $\beta_1=1.6$, $\beta_2=5.4$, $N=800$, $\chi_1=.02385$. Following the same procedure I found

$$\beta_3=23.68, \beta_4=86.2, \beta_5=555.84, \beta_6=2548.84$$

$$\text{and } B_1=-53.28, B_2=+5.14, B_3=+23.14, B_4=-5.21$$

Hence $\sqrt{N}\Sigma\beta_1=12.70$, $\sqrt{N}\Sigma\beta_2=35.52$, and the ratio of the probable error of the mode to the probable error of the mean=4.775.

We now have the following table:—

TABLE 2

Statistics	Expected	Observed	Difference \pm Probable error
Mean	0	[0.0190]	0.0208 \pm 0.00603
Mode - Mean	-0.16	-0.1593	0.0007 \pm 0.0288
ρ_2	0.064	0.0663	0.0023 \pm 0.0032
β_1	1.6	1.5303	0.0697 \pm 0.3038
β_2	5.4	5.2451	0.1549 \pm 0.7942

(3) $P=10$, $\bar{n}_q=5$, $D^2=0$, $\beta_1=0.8$, $\beta_2=4.2$, $N=400$, $\chi_1=.03372$.

From Yasukawa (p. 277, Table II) I find ratio of probable error of mode to the probable error of mean $=2.3991$.

TABLE 3

Statistics	Expected	Observed	Difference
Mean	0	[0.0208]	0.0208 \pm .0060
Mode-mean	-0.08	-0.0777	.0023 \pm .0145
μ_2	0.0320	0.0355	.0035 \pm .0019
β_1	0.8	1.0919	.2919 \pm .2293
β_2	4.2	4.5253	.3253 \pm .6811

(4) $D^2=0$, $\bar{n}_q=5$, $P=20$, $N=200$, $\chi_1=.04769$.

TABLE 4

Statistics	Expected	Observed	Difference
Mean	0	[0.0213]	.0208 \pm .00603
Mode-mean	-0.04	-0.0664	.0264 \pm .0105
μ_2	0.016	0.017535	.001536 \pm .001230
β_1	0.4	1.0360	.6360 \pm .1908
β_2	3.6	4.6651	1.0651 \pm .6176

21. Following the same procedure and using the same converted sheets (Nos. 1, 16-25) of tract No. XV (15), 220 samples of means of 20 (*i.e.*, $\bar{n}_q=20$) were obtained, combining them in different ways, and squaring 4,000 sampled values of $(m-m')^2/\sigma^2$ for $\bar{n}_q=20$, $P=1$, and $D^2=0$ (on the assumption of random sampling) were calculated. In the present example we have:

$$D^2=0, \bar{n}_q=20, \mu_2=\frac{0.02}{P}, \mu_3=\frac{0.008}{P^2}, \mu_4=\frac{.0012}{P^2} \left(1 + \frac{4}{P}\right)$$

$$\beta_1=\frac{8}{P}, \beta_2=3 + \frac{12}{P}, \text{Mode-mean} = -\frac{0.2}{P}$$

(5) $D^2=0$, $\bar{n}_q=20$, $P=1$, $N=4,000$, $\chi_1=.010665$.

TABLE 5

Statistics	Expected	Observed	Difference
Mean	0	[.0163]	.012080 \pm .001508
Mode-mean	-0.2	-.1998	.0002 \pm .2445
μ_2	.02	.022720	.002720 \pm .000798
β_1	8.00	7.0277	.9723 \pm .8422
β_2	15.00	12.7096	2.2904 \pm 2.0574

The mean value of \bar{D}^2 as directly calculated (without grouping) was .001208, and this is the value shown in the Table. The grouped value has been shown within square brackets.

$$(6) \bar{D}^2=0, n_g=20, P=5, N=800, \chi_1=.02385.$$

TABLE 6

Statistics	Expected	Observed	Difference
Mode mean	-.01	.03474	.00526 \pm .00720
μ_2	.0040	.004073	.000073 \pm .000200
β_1	1.60	1.1853	.4147 \pm .3038
β_2	5.40	4.7273	.6727 \pm .7942

$$(7) \bar{D}^2=0, n_g=20, P=10, N=400, \chi_1=.03372.$$

TABLE 7

Statistics	Expected	Observed	Difference
Mode mean	-.001	-.0017183	.002807 \pm .001508
μ_2	0.002	.002066	.000060 \pm .000618
β_1	0.8000	.5734	.2266 \pm .2293
β_2	4.2000	4.5795	.3795 \pm .6811

$$(8) \bar{D}^2=0, n_g=20, P=20, N=200, \chi_1=.04769.$$

TABLE 8

Statistics	Expected	Observed	Difference
Mode mean	-.001	-.0012191	.002191 \pm .002637
μ_2	.0010	.001346	.000346 \pm .000677
β_1	.4000	.4416	.0416 \pm .1903
β_2	3.6000	2.8851	.7149 \pm .6176

The agreement with theory is satisfactory in every case with the single exception of the mean value of \bar{D}^2 . Instead of the expected value $\bar{D}^2=0$, we actually obtain $\bar{D}^2=0.012 \pm .0015$ showing a deviation of 8 times its probable error. As this discrepancy was very puzzling, I checked the whole arithmetic most carefully, but without any tangible results. On more careful consideration I am inclined to think, that the discrepancy may be attributed to a slight bias (or deviation from random sampling) introduced at the stage of obtaining the differences ($m - m'$). It will be remembered that from the 11

converted sheets we had $11 \times 20 = 220$ independent samples of means of 20. These 220 values were used over and over again (although always in different combinations) to yield 4,000 values of $(m - m')$. A bias was created owing to the fact that the different combinations were taken in a certain systematic order, and not in a perfectly random manner, and also because the process was stopped when the number of differences reached 4,000, so that all possible combinations could not be included.

I now realise that I ought to have (a) used a larger number of Tippet's sheets, and (b) formed 8,000 random values of means of 20 before proceeding to take differences. I intend to repeat the experiment at the earliest opportunity.

If we assume that owing to the bias discussed above the actual value of $\bar{D}^2 = 0.12$ (and not zero), with $\bar{n}_q = 20$, $\delta = 0.24$, we have

$$\mu_2 = \frac{0.0228}{P}, \mu_3 = \frac{0.01088}{P^2}, \mu_4 = \frac{0.0012}{P^2} \left[1.5376 + \frac{5.92}{P} \right]$$

$$\beta_1 = \frac{7.7429}{P}, \beta_2 = 3 + \frac{11.5547}{P},$$

which lead to a slight improvement in the agreement with expected values.

22. I next turned to the Type I curve for values of $\bar{D}^2 \neq 0$, i.e., for samples drawn from different groups or populations.

(9) Taking one series of 800 values of $(m - m')$ I found that the mean value of \bar{D}^2 was 0.009564. Now adding 0.2 to each individual value of $(m - m')$, and squaring, I obtained a sample of 800 for $\bar{D}^2 = 0.009564 + (0.2)^2 = 0.049564$. Calculating the frequency constants in the usual way I got the following results:—

$\bar{D}^2 = 0.049564$, $\bar{n}_q = 20$, $\delta = 0.99128$, $P = 1$, $N = 800$, $\chi_1 = 0.2385$.

TABLE 9

Statistics	Expected	Observed	Difference
Mean	0.049564	0.055416	0.005852 \pm 0.004760
μ_2	0.039826	0.037837	0.001989 \pm 0.003152
β_1	6.2663	5.1978	1.0685 \pm 1.2290
β_2	12.0262	9.6168	2.4094 \pm 2.7835

(10) Taking a second series of 800 (for which \bar{D}^2 was 0.004050) adding 0.8, and squaring, I get a second sample for $\bar{D}^2 = 0.644050$, $\delta = 12.88$, $\bar{n}_q = 20$, $P = 1$, $N = 800$, $\chi_1 = 0.2385$.

TABLE 10

Statistics	Expected	Observed	Difference
Mean	·644050	·663126	·019076 ± ·012564
μ_2	·277620	·280092	·002472 ± ·012678
β_1	1·2352	·9696	·2656 ± ·2005
β_2	4·6044	3·9359	·6685 ± ·5020

(11) In the same way, adding 1·1 each to a sample of 800 values of $(m-m')$ for which (\bar{D}^2) was ·005049, I obtained a sample for

$$\bar{D}^2=1·215049, \delta=25·3, \bar{n}_q=20, P=1, N=800.$$

TABLE 11

Statistics	Expected	Observed	Difference
Mean	1·215049	1·182362	·032687 ± ·016625
μ_2	·486020	·563690	·07767 ± ·020928
β_1	·6928	1·3798	·6870 ± ·1331
β_2	3·9299	5·0756	1·1456 ± ·3726

As a last example I added all the above 3 sets of 800 each, and taking the average of each triplet obtained a sample for

$$\bar{D}^2=0·636221, \delta=12·7244, \bar{n}_q=20, P=3, N=800.$$

TABLE 12

Statistics	Expected	Observed	Difference
Mean	·636221	·633634	·002587 ± ·007188
μ_2	·090830	·084744	·006086 ± ·003506
β_1	·6242	·4730	·1512 ± ·1009
β_2	3·5617	3·3765	·1852 ± ·2455

23. We have thus tested experimentally the distribution for $\bar{n}_q=5$ and 20, $\delta=0$, and $P=1, 5, 10$, and 20. We have also tested the distribution for $\bar{n}_q=20, P=1$, and $\delta=0·8, 12·8, 25·2$ (approximately), and finally for $\delta=12·7244, \bar{n}_q=20, P=3$.

The difference between expected and observed values of the frequency constants was in most cases less than twice the corresponding probable error. In one case ($\bar{D}^2=0, \bar{n}_q=20$) the mean value gave a highly discrepant result. We have reasons for believing, however, that this may be attributed to a bias introduced at a certain stage of the sampling experiment. In one other case ($\bar{n}_q=20, P=1, \bar{D}^2=1·215$) the agreement is not

converted sheets we had $11 \times 20 = 220$ independent samples of means of 20. These 220 values were used over and over again (although always in different combinations) to yield 4,000 values of $(m - m')$. A bias was created owing to the fact that the different combinations were taken in a certain systematic order, and not in a perfectly random manner, and also because the process was stopped when the number of differences reached 4,000, so that all possible combinations could not be included.

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$$\mu_2 = \frac{0.0228}{P}, \mu_3 = \frac{0.01088}{P^2}, \mu_4 = \frac{0.0012}{P^2} \left[1.5376 + \frac{5.92}{P} \right]$$

$$\beta_1 = \frac{7.7429}{P}, \beta_2 = 3 + \frac{11.5547}{P},$$

which lead to a slight improvement in the agreement with expected values.

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(11) In the same way, adding 1.1 each to a sample of 800 values of $(m - m')$ for which (\bar{D}^2) was .005049, I obtained a sample for

$$\bar{D}^2 = 1.215049, \delta = 25.3, \bar{n}_q = 20, P = 1, N = 800.$$

TABLE 11

Statistics	Expected	Observed	Difference
Mean	1.215049	1.182362	.032687 \pm .016625
μ_2	.486020	.563690	.07767 \pm .020928
β_1	.6928	1.3798	.6870 \pm .1331
β_2	3.9299	5.0756	1.1456 \pm .3726

As a last example I added all the above 3 sets of 800 each, and taking the average of each triplet obtained a sample for

$$\bar{D}^2 = 0.636221, \delta = 12.7244, \bar{n}_q = 20, P = 3, N = 800.$$

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Statistics	Expected	Observed	Difference
Mean	.636221	.633634	.002587 \pm .007188
μ_2	.090830	.084744	.006086 \pm .003506
β_1	.6242	.4730	.1512 \pm .1009
β_2	3.5617	3.3765	.1852 \pm .2455

23. We have thus tested experimentally the distribution for $\bar{n}_q = 5$ and 20, $\delta = 0$, and $P = 1, 5, 10$, and 20. We have also tested the distribution for $\bar{n}_q = 20$, $P = 1$, and $\delta = 0.8, 12.8, 25.2$ (approximately), and finally for $\delta = 12.7244$, $\bar{n}_q = 20$, $P = 3$.

The difference between expected and observed values of the frequency constants was in most cases less than twice the corresponding probable error. In one case ($\bar{D}^2 = 0$, $\bar{n}_q = 20$) the mean value gave a highly discrepant result. We have reasons for believing, however, that this may be attributed to a bias introduced at a certain stage of the sampling experiment. In one other case ($\bar{n}_q = 20$, $P = 1$, $\bar{D}^2 = 1.215$) the agreement is not

good, but taking the results as a whole they may be considered quite satisfactory.¹

VI. OTHER COEFFICIENTS OF DIVERGENCE IN MEANS

24. We can construct other measures of divergence in means by choosing different values for k_p . Let us take $k_p^2 = \bar{s}_p^2$, where \bar{s}_p^2 is a reliable *constant* value of the inter-class variance. Then we obtain a second coefficient of divergence in means

$$D_2^2 = \frac{1}{P} S_p \left[\frac{(\bar{m}_{pq} - \bar{m}_{pq}')^2}{\bar{s}_p^2} \right] - \frac{1}{P} S_p \left[\frac{\bar{\sigma}_p^2}{\bar{s}_p^2} \left(\frac{1}{n_{pq}} + \frac{1}{n_{pq}'} \right) \right] \dots (26.0)$$

with mean value

$$(\bar{D}_2^2) = \frac{1}{P} S_p \left[\frac{(\bar{m}_{pq} - \bar{m}_{pq}')^2}{\bar{s}_p^2} \right] \dots \dots \dots (26.1)$$

and

$$\begin{aligned} \mu_2(D_2^2) = & \frac{4}{P^2} S_p \left[\frac{(\bar{m}_{pq} - \bar{m}_{pq}')^2}{\bar{s}_p^2} \left\{ \frac{\bar{\sigma}_p^2}{\bar{s}_p^2} \left(\frac{1}{n_{pq}} + \frac{1}{n_{pq}'} \right) \right\} \right] \\ & + \frac{2}{P^2} S_p \left[\frac{\bar{\sigma}_p^4}{\bar{s}_p^4} \left(\frac{1}{n_{pq}} + \frac{1}{n_{pq}'} \right)^2 \right] \dots (26.2). \end{aligned}$$

If the size of the samples remains constant² for all characters, we may write as before $\frac{2}{\bar{n}_q} = \left(\frac{1}{n_q} + \frac{1}{n_q'} \right)$, and obtain

$$D_2^2 = \frac{1}{P} S_p \left[\frac{(\bar{m}_{pq} - \bar{m}_{pq}')^2}{\bar{s}_p^2} \right] - \frac{2}{\bar{n}_q} \cdot \frac{1}{P} S_p \left[\left(\frac{\bar{\sigma}_p^2}{\bar{s}_p^2} \right) \right] \dots (26.3)$$

$$(\bar{D}_2^2) = \frac{1}{P} S \left[\frac{(\bar{m}_{pq} - \bar{m}_{pq}')^2}{\bar{s}_p^2} \right] \dots \dots \dots (26.4)$$

$$\begin{aligned} \mu_2(D_2^2) = & \frac{8}{P^2 \cdot \bar{n}_q} S_p \left[\frac{(\bar{m}_{pq} - \bar{m}_{pq}')^2}{\bar{s}_p^2} \cdot \frac{\bar{\sigma}_p^2}{\bar{s}_p^2} \right] \\ & + \frac{8}{P^2 \cdot \bar{n}_q^2} \cdot S_p \left[\left(\frac{\bar{\sigma}_p^4}{\bar{s}_p^4} \right) \right] \dots (26.5). \end{aligned}$$

It is also possible to derive an exactly similar set of equations for a third coefficient D_3^2 by putting $k_p^2 = \Sigma_p^2$, where Σ_p^2 is a

¹ I am indebted to my assistant Mr. Sudhir Kumar Banerjee for help in the arithmetical calculations in the sampling experiments.

² Or when the fluctuation in the size of the sample can be neglected, and a mean value of \bar{n}_q as defined by equation (16.7) can be used without appreciable error.

reliable constant value of the "familial" variance as defined in equation (2.8).

25. It will be noticed that we have deduced the above expressions on the assumption that $\bar{\sigma}_p^2$, \bar{s}_p^2 (or Σ_p^2) are all constants, that is, on the assumption that the variance of these quantities are negligibly small. This assumption will be justified only when the estimates are based on a very large number of individual observations. In actual practice it would some time happen that we are obliged to base the estimates for $\bar{\sigma}_p^2$, \bar{s}_p^2 , or Σ_p^2 on observed samples. In such cases, unless the size of the sample is very large, it would not be proper to neglect the variance of these quantities.

Let us consider the case $x_{pq} = m_{pq}$, $x_{pq}' = m_{pq}'$, and $k_p^2 = \sigma_p^2$, where σ_p^2 is an estimate of variance based on n_p effective observations. If the size of the two samples are n_{pq} , n_{pq}' respectively, we have

$$v_p^2 = \frac{\bar{\sigma}_p^2 \left(\frac{1}{n_{pq}} + \frac{1}{n_{pq}'} \right)}{(\bar{m}_{pq} - \bar{m}_{pq}')^2} \dots \dots \dots (27.1)$$

$$w_p^2 = \frac{\sigma_p^2}{2n_p} \cdot \frac{1}{\bar{\sigma}_p^2} = \frac{1}{2n_p} \dots \dots \dots (27.2).$$

We then have for the quantity

$$b = \frac{1}{P} \cdot S_p \left[\frac{(\bar{m}_{pq} - \bar{m}_{pq}')^2}{\sigma_p^2} \right] \dots \dots \dots (27.3)$$

the mean value

$$\bar{b} = \frac{1}{P} S_p \left[\frac{(\bar{m}_{pq} - \bar{m}_{pq}')^2}{\sigma_p^2} \left\{ 1 + \frac{\bar{\sigma}_p^2 \left(\frac{1}{n_{pq}} + \frac{1}{n_{pq}'} \right)}{(\bar{m}_{pq} - \bar{m}_{pq}')^2} \right\} (1 + \alpha_p) \right] \quad (27.4)$$

$$= \frac{1}{P} S_p \left[\frac{\bar{m}_{pq} - \bar{m}_{pq}'}{\sigma_p^2} (1 + \alpha_p) \right] + \frac{1}{P} S \left[\left(\frac{1}{n_{pq}} + \frac{1}{n_{pq}'} \right) (1 + \alpha_p) \right] \dots (27.41)$$

where

$$\alpha_p = \left(\frac{3}{2 \cdot n_p} + \frac{15}{4 \cdot n_p^2} + \frac{105}{8 \cdot n_p^3} + \frac{945}{16 \cdot n_p^4} + \frac{10,395}{32 \cdot n_p^5} \right) \dots (27.5)$$

is a purely numerical factor.

When $n_p = n$ is same for all characters, and n_{pq} , n_{pq}' are also constant, so that we may write $\frac{2}{n_q} = \left(\frac{1}{n_q} + \frac{1}{n_q} \right)$, we can define a measure of divergence

$$D_1^2 = \frac{1}{(1+\alpha_1)} \cdot \frac{1}{\bar{P}} S \left[\frac{(m_{pq} - m_{pq'})^2}{\bar{\sigma}_p^2} \right] - \frac{2}{\bar{n}_q} \quad \dots \quad (27.6)$$

where

$$\alpha_1 = \left(\frac{3}{2n} + \frac{15}{4n^2} + \frac{105}{8n^3} + \frac{945}{16n^4} + \frac{10,395}{32 \cdot n^5} \right) \dots \quad (27.51).$$

When n_{pq} , n_{pq}' , and n_p are not constant, we may still define

$$D_1^2 = \frac{1}{\bar{P}} S_p \left[\left\{ \left(\frac{1}{1+\alpha_p} \right) \frac{(m_{pq} - m_{pq'})^2}{\bar{\sigma}_p^2} \right\} - \left(\frac{1}{n_{pq}} + \frac{1}{n_{pq}'} \right) \right] \quad (27.61)$$

where α_p is given by equation (27.5).

The mean value is given in both cases by

$$(\bar{D}_1^2) = \frac{1}{\bar{P}} S_p \left[\frac{(\bar{m}_{pq} - \bar{m}_{pq'})^2}{\bar{\sigma}_p^2} \right] \dots \quad (27.7)$$

which will again vanish when both the samples are drawn from the same population.

From equations (11.2) and (10.7) we also have

$$\begin{aligned} \mu_2(D_1^2) &= \frac{\alpha_2'}{(1+\alpha_1)^2} \left(\frac{8}{\bar{P} \cdot \bar{n}_q} \right) \left[(\bar{D}_1^2) + \frac{1}{\bar{n}_q} \right] \\ &\quad + \frac{2\alpha_3'}{(1+\alpha_1)^2} \cdot \frac{1}{\bar{P}} S_p \left[\frac{(\bar{m}_{pq} - \bar{m}_{pq'})^4}{\bar{\sigma}_p^4} \right] \\ &= (1+\alpha_2) \cdot \frac{8}{\bar{P} \cdot \bar{n}_q} \left[(\bar{D}_1^2) + \frac{1}{\bar{n}_q} \right] \\ &\quad + 2\alpha_3 \cdot \frac{1}{\bar{P}} S_p \left[\frac{(\bar{m}_{pq} - \bar{m}_{pq'})^4}{\bar{\sigma}_p^4} \right] \dots \quad (27.8) \end{aligned}$$

where

$$\left. \begin{aligned} \alpha_2' &= 1 + \frac{1}{2n} + \frac{138}{4n^2} + \frac{1,740}{8 \cdot n^3} + \frac{24,615}{16 \cdot n^4} \\ \alpha_3' &= \frac{2}{2 \cdot n} + \frac{54}{4 \cdot n^2} + \frac{558}{8 \cdot n^3} + \frac{8,526}{16 \cdot n^4} \end{aligned} \right\} \dots \quad (27.9).$$

and

$$\begin{aligned} \alpha_2 &= \frac{3}{n} + \frac{63}{4 \cdot n^2} + \frac{207}{8 \cdot n^3} + \frac{12,645}{16 \cdot n^4} \\ \alpha_3 &= \frac{1}{n} + \frac{27}{2 \cdot n^2} + \frac{279}{4 \cdot n^3} + \frac{4,263}{8 \cdot n^4} \end{aligned}$$

It will be noticed from the above formulæ that n must be fairly large in order that α_1 , α_2 , and α_3 may be negligibly small. If this condition is not fulfilled, and values of σ_p^2 based on small samples are used for calculating D^2 , we should not be surprised if considerable fluctuations occur in observed values of D^2 from sample to sample.

26. Again let us choose $k_p^2 = M_p^2$, where M_p^2 is a reliable value of the inter-class mean for the p th character. As before we have

$$v_p^2 = \frac{\bar{\sigma}_p^2 \left(\frac{1}{n_{pq}} + \frac{1}{n_{pq}'} \right)}{(\bar{m}_{pq} - \bar{m}_{pq}')^2} \quad \dots \quad (28.01)$$

and

$$w_p^2 = \frac{s_p^2}{M_p^2} \quad \dots \quad (28.02)$$

and we can easily obtain the necessary formulæ by substituting these values in equations (10.6)–(10.9) and (11.1)–(11.4).

If M_p is derived from wider material than the samples under consideration, we may treat it as a constant and put $w_p^2 = 0$. In this case we have

$$D_4^2 = \frac{1}{P} S_p \left[\frac{(\bar{m}_{pq} - \bar{m}_{pq}')^2}{M_p^2} \right] - \frac{1}{P} S_p \left[\frac{\bar{\sigma}_p^2 \left(\frac{1}{n_{pq}} + \frac{1}{n_{pq}'} \right)}{M_p^2} \right] \quad \dots \quad (28.1)$$

with mean value

$$\bar{D}_4^2 = \frac{1}{P} S_p \left[\frac{(\bar{m}_{pq} - \bar{m}_{pq}')^2}{M_p^2} \right] \quad \dots \quad (28.11)$$

and

$$\mu_2(D_4^2) = \frac{4}{P^2} S_p \left[\frac{(\bar{m}_{pq} - \bar{m}_{pq}')^2}{M_p^2} \cdot \frac{\bar{\sigma}_p^2 \left(\frac{1}{n_{pq}} + \frac{1}{n_{pq}'} \right)}{M_p^2} \right] + \frac{2}{P^2} S_p \left[\frac{\bar{\sigma}_p^4 \left(\frac{1}{n_{pq}} + \frac{1}{n_{pq}'} \right)^2}{M_p^4} \right] \quad \dots \quad (28.2).$$

When the size of the samples are constant, we may write

$\frac{2}{\bar{n}_q} = \left(\frac{1}{n_{pq}} + \frac{1}{n_{pq}'} \right)$, and also writing

$$V_2 = \frac{1}{P} S_p \left[\left(\frac{\bar{\sigma}_p^2}{M_p^2} \right) \right], \text{ and } V_4 = \frac{1}{P} S_p \left[\left(\frac{\bar{\sigma}_p^4}{M_p^4} \right) \right] \quad \dots \quad (28.3)$$

$$D_1^2 = \frac{1}{(1+\alpha_1)} \cdot \frac{1}{P} S \left[\frac{(m_{pq} - m_{pq}')^2}{\bar{\sigma}_p^2} \right] - \frac{2}{\bar{n}_q} \quad \dots \quad (27.6)$$

where

$$\alpha_1 = \left(\frac{3}{2n} + \frac{15}{4n^2} + \frac{105}{8n^3} + \frac{945}{16n^4} + \frac{10,395}{32 \cdot n^5} \right) \dots \dots \dots (27.51).$$

When n_{pq} , n_{pq}' , and n_p are not constant, we may still define

$$D_1^2 = \frac{1}{P} S_p \left[\left\{ \left(\frac{1}{1+\alpha_p} \right) \frac{(m_{pq} - m_{pq}')^2}{\bar{\sigma}_p^2} \right\} - \left(\frac{1}{n_{pq}} + \frac{1}{n_{pq}'} \right) \right] \quad (27.61)$$

where α_p is given by equation (27.5).

The mean value is given in both cases by

$$(\bar{D}_1^2) = \frac{1}{P} S_p \left[\frac{(\bar{m}_{pq} - \bar{m}_{pq}')^2}{\bar{\sigma}_p^2} \right] \dots \dots \dots (27.7)$$

which will again vanish when both the samples are drawn from the same population.

From equations (11.2) and (10.7) we also have

$$\begin{aligned} \mu_2(D_1^2) &= \frac{\alpha_2'}{(1+\alpha_1)^2} \left(\frac{8}{P \cdot \bar{n}_q} \right) \left[(\bar{D}_1^2) + \frac{1}{\bar{n}_q} \right] \\ &\quad + \frac{2\alpha_3'}{(1+\alpha_1)^2} \cdot \frac{1}{P} S_p \left[\frac{(\bar{m}_{pq} - \bar{m}_{pq}')^4}{\bar{\sigma}_p^4} \right] \\ &= (1+\alpha_2) \cdot \frac{8}{P \cdot \bar{n}_q} \left[(\bar{D}_1^2) + \frac{1}{\bar{n}_q} \right] \\ &\quad + 2\alpha_3 \cdot \frac{1}{P} S_p \left[\frac{(\bar{m}_{pq} - \bar{m}_{pq}')^4}{\bar{\sigma}_p^4} \right] \dots \dots (27.8) \end{aligned}$$

where

$$\left. \begin{aligned} \alpha_2' &= 1 + \frac{1}{2n} + \frac{138}{4n^2} + \frac{1,740}{8 \cdot n^3} + \frac{24,615}{16 \cdot n^4} \\ \alpha_3' &= \frac{2}{2 \cdot n} + \frac{54}{4 \cdot n^2} + \frac{558}{8 \cdot n^3} + \frac{8,526}{16 \cdot n^4} \end{aligned} \right\} \dots \dots (27.9).$$

$$\left. \begin{aligned} \alpha_2 &= \frac{3}{n} + \frac{63}{4 \cdot n^2} + \frac{207}{3 \cdot n^3} + \frac{12,645}{16 \cdot n^4} \\ \alpha_3 &= \frac{1}{n} + \frac{27}{2 \cdot n^2} + \frac{279}{4 \cdot n^3} + \frac{4,263}{8 \cdot n^4} \end{aligned} \right\}$$

and

It will be noticed from the above formulæ that n must be fairly large in order that α_1 , α_2 , and α_3 may be negligibly small. If this condition is not fulfilled, and values of σ_p^2 based on small samples are used for calculating D^2 , we should not be surprised if considerable fluctuations occur in observed values of D^2 from sample to sample.

26. Again let us choose $k_p^2 = M_p^2$, where M_p^2 is a reliable value of the inter-class mean for the p th character. As before we have

$$v_p^2 = \frac{\bar{\sigma}_p^2 \left(\frac{1}{n_{pq}} + \frac{1}{n_{pq'}} \right)}{(\bar{m}_{pq} - \bar{m}_{pq'})^2} \dots \dots \dots (28.01)$$

and

$$w_p^2 = \frac{s_p^2}{M_p^2} \dots \dots \dots (28.02)$$

and we can easily obtain the necessary formulæ by substituting these values in equations (10.6)–(10.9) and (11.1)–(11.4).

If M_p is derived from wider material than the samples under consideration, we may treat it as a constant and put $w_p^2 = 0$. In this case we have

$$D_4^2 = \frac{1}{P} S_p \left[\frac{(\bar{m}_{pq} - \bar{m}_{pq'})^2}{M_p^2} \right] - \frac{1}{P} S_p \left[\frac{\bar{\sigma}_p^2}{M_p^2} \left(\frac{1}{n_{pq}} + \frac{1}{n_{pq'}} \right) \right] \dots (28.1)$$

with mean value

$$\bar{D}_4^2 = \frac{1}{P} S_p \left[\frac{(\bar{m}_{pq} - \bar{m}_{pq'})^2}{M_p^2} \right] \dots \dots \dots (28.11)$$

and

$$\mu_2(D_4^2) = \frac{4}{P^2} S_p \left[\frac{(\bar{m}_{pq} - \bar{m}_{pq'})^2}{M_p^2} \cdot \frac{\bar{\sigma}_p^2}{M_p^2} \left(\frac{1}{n_{pq}} + \frac{1}{n_{pq'}} \right) \right] + \frac{2}{P^2} S_p \left[\frac{\bar{\sigma}_p^4}{M_p^4} \left(\frac{1}{n_{pq}} + \frac{1}{n_{pq'}} \right)^2 \right] \dots (28.2).$$

When the size of the samples are constant, we may write

$\frac{2}{n_q} = \left(\frac{1}{n_{pq}} + \frac{1}{n_{pq'}} \right)$, and also writing

$$V_2 \equiv \frac{1}{P} S_p \left[\left(\frac{\bar{\sigma}_p^2}{M_p^2} \right) \right], \text{ and } V_4 \equiv \frac{1}{P} S_p \left[\left(\frac{\bar{\sigma}_p^4}{M_p^4} \right) \right] \dots (28.3)$$

we have

$$D_4^2 = \frac{1}{P} S_p \left[\frac{(\bar{m}_{pq} - \bar{m}_{pq}')^2}{\bar{M}_p^2} \right] - \frac{8}{\bar{n}_q} \cdot V_2 \quad \dots \quad (28.4)$$

and

$$\begin{aligned} \mu_2(D_4^2) = \frac{8}{P \cdot \bar{n}_q} S_p \left[\frac{(\bar{m}_{pq} - \bar{m}_{pq}')^2}{\bar{M}_p^2} \cdot \left(\frac{\bar{\sigma}_p^2}{\bar{M}_p^2} \right) \right] \\ + \frac{8}{P \cdot \bar{n}_q^2} \cdot V_4 \quad \dots \quad (28.5). \end{aligned}$$

Similar expressions can be obtained for a fifth coefficient D_5^2 by using the "familial" mean (m_p) instead of the inter-class mean (M_p).

VII. THE PRINCIPLE OF EQUIPARTITION OF VARIANCE AND A COEFFICIENT OF FAMILIAL DIFFERENTIATION

27. There exist certain algebraic relations between $\bar{\sigma}_p^2$, s_p^2 and Σ_p^2 which are of considerable interest in connection with the question of the choice of a suitable value for k_p^2 .

We start with the algebraic identity:

$$\begin{aligned} S_q S_t [(x_{pqt} - m_p)^2] = S_q S_t [(x_{pqt} - m_{pq})^2] + \\ S_q [n_{pq} (m_{pq} - M_p)^2] \quad \dots \quad (29.0). \end{aligned}$$

Using equations (2.8) and (2.4) we have from the above equation

$$n_p \cdot \Sigma_p^2 = S_q [(n_{pq} \cdot \sigma_{pq}^2)] + S_q [n_{pq} (m_{pq} - M_p)^2] \quad \dots \quad (29.1).$$

If the size of the sample is kept invariable for the same character for all the samples, i.e., n_{pq} is constant for all values of q , we get

$$n_p \cdot \Sigma_p^2 = n_{pq} \cdot S_q [(\sigma_{pq}^2)] + n_{pq} \cdot S_q [(m_{pq} - M_p)^2] \quad \dots \quad (29.2).$$

Using (2.9) and (2.6) we obtain

$$n_p \Sigma_p^2 = n_{pq} \cdot (N_p \bar{\sigma}_p^2) + n_{pq} \cdot (N_p s_p^2) \quad \dots \quad (29.3).$$

But when n_{pq} is constant for all values of q , we have $n_p = N_p \cdot n_{pq}$, by equation (2.2). We therefore get finally

$$\Sigma_p^2 = \bar{\sigma}_p^2 + s_p^2 \quad \dots \quad (29.4).$$

The total or familial variance is made up of the average variance within the group (when the size of the group is kept constant) together with the variance for variation from group to group.

28. Equation (29.4) is very suggestive. Consider a population which has become differentiated in course of time into a large number of different groups. It leads us to enunciate a proposition that, when the variation has proceeded in an absolutely random manner (and for a sufficiently long time), the total variance within the population would tend to become equally distributed between the different modes of variation.

We may refer to this proposition as the *principle of equipartition of variance*. When the variance within any particular group reaches a certain limiting value conditions would become unstable, and the group would tend to break up into two or more sub-groups. On the other hand if the variation within a group, becomes too restricted, the group itself would tend to disappear or become absorbed by other groups. For absolutely random variation therefore we may expect that

$$\Sigma_p^2 = 2\bar{\sigma}_p^2 = 2s_p^2 \quad \dots \quad (30.0),$$

29. The ratio of the inter-group¹ variance (s_p^2) to the average intra-group variance ($\bar{\sigma}_p^2$) would thus furnish a convenient coefficient for the measurement of the differentiation within any given collection (or family) of groups. We may call such a quantity a coefficient of familial differentiation and define it by

$$f^2 = \frac{1}{P} S \left[\left(\frac{s_p^2}{\sigma_p^2} \right) \left(\frac{1}{1 + \eta_p} \right) \right] \quad \dots \quad (31.0)$$

where

$$v_p^2 = \frac{\Sigma s_p^2}{s_p^2} = \frac{1}{2 \cdot N_p}, \quad w_p^2 = \frac{\Sigma \sigma_p^2}{\bar{\sigma}_p^2} = \frac{1}{2 \cdot n_p} \quad \dots \quad (31.01)$$

$$\text{and } (1 + \eta_p) = (1 + v_p^2)(1 + 3w_p^2 + 15w_p^4 + 105w_p^6 + 945w_p^8 + 10,395w_p^{10}) \quad \dots \quad (31.02).$$

Here N_p and n_p are the effective numbers of observation on which the estimates of the two variances s_p^2 and $\bar{\sigma}_p^2$ are respectively based.

For any given collection of groups, N_p the number of groups will usually be considerably smaller than n_p which is a number of the order of the total number of individuals in the

whole collection, and $\frac{1}{2 \cdot n_p}$ may therefore be neglected in com-

parison with $\frac{1}{2N_p}$.

¹ It would be better to call it the co-group variance, so that it may be clearly distinguished from the intra-group variance.

Thus when $w_p^2=0$ approximately, we have

$$f^2 = \frac{1}{P} S_p \left[\left(\frac{s_p^2}{\sigma_p^2} \right) \left(\frac{1}{1+v_p^2} \right) \right] \quad \dots \quad (31.1)$$

with mean value

$$\bar{f}^2 = \frac{1}{P} S_p \left[\left(\frac{\bar{s}_p^2}{\sigma_p^2} \right) \right] \quad \dots \quad (31.11)$$

where \bar{s}_p^2 and $\bar{\sigma}_p^2$ are mean values of s_p^2 and σ_p^2 respectively. Also using equations (10.6)–(10.9) and (11.1)–(11.4),

$$\mu_2(f^2) = \frac{2}{P^2} S_p \left[\left(\frac{\bar{s}_p^2}{\sigma_p^2} \right)^2 \cdot \left\{ v_p^2(2-3v_p^2-4v_p^4-5v_p^6 + 6v_p^8) \right\} \right] \quad \dots \quad (31.2)$$

$$\mu_3(f^2) = \frac{8}{P^3} S_p \left[\left(\frac{\bar{s}_p^2}{\sigma_p^2} \right)^3 \cdot \left\{ v_p^4(3-8v_p^2+15v_p^4 - 24v_p^6) \right\} \right] \quad \dots \quad (31.3)$$

$$\begin{aligned} \mu_4(f^2) = & \frac{12}{P^4} S_p \left[\left(\frac{\bar{s}_p^2}{\sigma_p^2} \right)^4 \cdot \left\{ v_p^4(4+4v_p^2-35v_p^4+100 \cdot v_p^6) \right\} \right] \\ & + \frac{24}{P^4} S_p S_r \left[\left\{ \left(\frac{\bar{s}_p^2}{\sigma_p^2} \right) \cdot v_p^2(2-3v_p^2+4v_p^4+5v_p^6 + 6v_p^8) \right\} \cdot \left\{ \left(\frac{\bar{s}_r^2}{\sigma_r^2} \right) \cdot v_r^2(2-3v_r^2+4v_r^4-5v_r^6+6v_r^8) \right\} \right] \quad \dots \quad (31.4). \end{aligned}$$

When $N_p=N$ is constant for all values of p , we may write the above equations in the following form :

$$f^2 = \left(\frac{1}{1+v^2} \right) \cdot \frac{1}{P} S \left[\left(\frac{s_p^2}{\sigma_p^2} \right) \right] = \frac{\gamma_1}{P} S_p \left[\left(\frac{s_p^2}{\sigma_p^2} \right) \right] \quad \dots \quad (31.5)$$

$$\text{with } \bar{f}^2 = \frac{1}{P} S_p \left[\left(\frac{\bar{s}_p^2}{\sigma_p^2} \right) \right] \quad \dots \quad (31.51)$$

$$\mu_2(f^2) = \frac{2\gamma_2}{N \cdot P^2} S_p \left[\left(\frac{\bar{s}_p^2}{\sigma_p^2} \right)^2 \right] \quad \dots \quad (31.6)$$

$$\mu_3(f^2) = \frac{6 \cdot \gamma_3}{N \cdot P^3} S_p \left[\left(\frac{\bar{s}_p^2}{\sigma_p^2} \right)^3 \right] \quad \dots \quad (31.7)$$

$$\mu_4(f^2) = \frac{12 \cdot \gamma_4}{N \cdot P^4} S_p \left[\left(\frac{\bar{s}_p^2}{\sigma_p^2} \right)^4 \right] + \frac{24\gamma_2^2}{N^2 \cdot P^4} S_p S_r \left[\left(\frac{\bar{s}_p^2}{\sigma_p^2} \right) \left(\frac{\bar{s}_r^2}{\sigma_r^2} \right) \right] \quad (31.8)$$

where $\gamma_1, \gamma_2, \gamma_3$, and γ_4 are purely numerical factors given by

$$\left. \begin{aligned} \gamma_1 &= 1 - \frac{1}{2N} + \frac{1}{4N^2} - \frac{1}{8N^3} + \frac{1}{16N^4} \\ \gamma_2 &= 1 - \frac{3}{2N} + \frac{1}{2N^2} - \frac{5}{16N^3} + \frac{3}{16N^4} \\ \gamma_3 &= 1 - \frac{4}{3N} + \frac{5}{4N^2} - \frac{1}{N^3} \\ \gamma_4 &= 1 + \frac{2}{N} - \frac{85}{16N^2} + \frac{25}{8N^3} \end{aligned} \right\} \dots \dots (31.9).$$

The numerical factors, $\gamma_1, \gamma_2, \gamma_3$, and γ_4 approach the limiting value 1 as N increases. I give below actual values of the coefficients for a few selected values of N .

$N =$	10	20	50	100	∞
γ_1	0.952	0.976	0.990	0.995	1.000
γ_2	0.855	0.926	0.970	0.985	1.000
γ_3	0.878	0.934	0.973	0.987	1.000
γ_4	1.181	1.095	1.039	1.020	1.000

When $\left(\frac{\bar{s}_p^2}{\sigma_p^2}\right) = 1$ for all values of p , the above formulæ reduce to

$$\left. \begin{aligned} \bar{f}^2 &= 1, \mu_2(f^2) = \frac{2\gamma_2}{N \cdot P}, \mu_3(f^2) = \frac{6\gamma_3}{N^2 P^2} \\ \mu_4(f^2) &= \frac{12\gamma_4}{N^2 P^3} + \frac{12\gamma_2^2(P-1)}{N^2 P^3} \end{aligned} \right\} \dots \dots (31.91).$$

If in addition N is large,

$$\beta_1 = \frac{9}{2NP} \left(1 + \frac{11}{6N}\right), \beta_2 = 3 + \frac{15}{PN} \dots \dots (31.92).$$

30. The usefulness of the coefficient of familial differentiation (f^2) does not of course depend on the validity or otherwise of what I have called the principle of equipartition of variance. For it is very simply connected with D^2 , the first coefficient of divergence defined by equation (14.0).

We may write

$$(m_{pq} - m_{pq}') = (m_{pq} - M_p) + (M_p - m_{pq}') \dots (32.1).$$

It is easily seen that squaring equation (32.1), and summing for all possible comparisons within the given collection (or family) of groups we get

$$S[(m_{pq} - m_{pq}')^2] = (q-1)S[(m_{pq} - M_p)^2] = (q-1) \cdot q \cdot s_p^2 \dots (32.2)$$

where $q \cdot s_p^2 = S[(m_{pq} - M_p)^2]$ gives the co-group variance for the p th character, q being the total number of groups available. For any assigned character the mean value of $(m_{pq} - m_{pq}')^2$ for all possible comparisons is thus $2s_p^2$, since the total number of comparisons possible $= q(q-1)/2$. Writing the mean value of D^2 for all possible comparisons ($q(q-1)/2$ in number) as D_m^2 , we have therefore

$$D_m^2 = \frac{1}{P} S \left[\left(\frac{2s_p^2}{\bar{n}} \right) \right] - \frac{2}{\bar{n}} = [2(1+v^2) \cdot f^2] - \frac{2}{\bar{n}} \dots (32.3)$$

where $v^2 = \frac{1}{2N}$ approximately, and \bar{n} is the harmonic mean of all the different values of n_{pq}, n_{pq}' .

When \bar{n} and N are both large, i.e., $\frac{2}{\bar{n}}$ and $\frac{1}{2N}$ are both negligibly small, we shall have $D_m^2 = 2f^2$. We thus find that (excepting for a small correcting factor) the coefficient of familial differentiation f^2 is numerically equal to half the average value of the group divergence, the average being taken for all possible comparisons within the given collection of groups.

For an absolutely random collection, if we assume that the principle of equi-partition of variance is true, we should have

$$s_p^2 = \bar{\sigma}_p^2 = \frac{1}{2} \Sigma_p^2 \dots \dots \dots (32.4).$$

In this case the two measures of divergence D^2 and D_2^2 become equal, while

$$D_3^2 = \frac{1}{2} D_2^2 = \frac{1}{2} D^2 \dots \dots \dots (32.5).$$

VIII. A COEFFICIENT OF DIVERGENCE IN VARIABILITY

31. We may also easily construct measures of divergence in variability. Let us choose $x_{pq} = \sigma_{pq}$, $x_{pq}' = \sigma_{pq}'$, and $k_p^2 = \bar{\sigma}_p^2$, where $\bar{\sigma}_p^2$ is a reliable constant value of the variance in the p th character which does not fluctuate from sample to sample. Then as a first approximation we may substitute

$$\Sigma x_{pq}^2 = \frac{\bar{\sigma}_p^2}{2n_{pq}}, \quad \Sigma x_{pq}'^2 = \frac{\bar{\sigma}_p^2}{2n_{pq}'} \dots \dots \dots (33.01)$$

$$v_p^2 = \frac{\bar{\sigma}_p^2}{(\sigma_{pq} - \sigma_{pq}')^2} \left(\frac{1}{2n_{pq}} + \frac{1}{2n_{pq}'} \right), \quad w_p^2 = 0 \dots \dots (33.02)$$

where n_{pq}, n_{pq}' are the size of the two samples.

Using equation (13) we define a measure of divergence in variability by

$$F^2 = \frac{2}{P} S_p \left[\frac{(\sigma_{pq} - \sigma_{pq}')^2}{\sigma_p^2} \right] - \frac{2}{P} S_p \left[\left(\frac{1}{2n_{pq}} + \frac{1}{2n_{pq}'} \right) \right] \quad (33.0)$$

$$= \frac{2}{P} S_p \left[\frac{(\sigma_{pq} - \sigma_{pq}')^2}{\sigma_p^2} \right] - \frac{2}{\bar{n}_q} \dots \dots \dots (33.01)$$

when the size of the samples is constant for all characters, or a mean value \bar{n}_q as defined by equation (16.7) may be used without appreciable errors. The mean value of F^2 is easily found to be

$$\bar{F}^2 = \frac{1}{P} S_p \left[\frac{(\bar{\sigma}_{pq} - \bar{\sigma}_{pq}')^2}{\bar{\sigma}_p^2} \right] \dots \dots \dots (33.1)$$

$$\begin{aligned} \mu_2(F^2) &= \frac{16}{P^2} S_p \left[\frac{(\bar{\sigma}_{pq} - \bar{\sigma}_{pq}')^2}{\bar{\sigma}_p^2} \left(\frac{1}{2n_{pq}} + \frac{1}{2n_{pq}'} \right) \right] \\ &\quad + \frac{8}{P^2} S_p \left[\left(\frac{1}{2n_{pq}} + \frac{1}{2n_{pq}'} \right)^2 \right] \dots \quad (33.2). \end{aligned}$$

We may use equation (16.7), and write

$$\frac{1}{\bar{n}_q} = \frac{1}{P} S_p \left[\left(\frac{1}{2n_{pq}} + \frac{1}{2n_{pq}'} \right) \right] \dots \dots \dots (16.71)$$

when the size of the samples is constant for all character, or when the fluctuation in the size of the sample can be neglected.

We then obtain

$$\mu_2(F^2) = \frac{8}{P \cdot \bar{n}_q} \left[2(\bar{F}^2) + \frac{1}{\bar{n}_q} \right] \dots \dots \dots (33.21)$$

$$\mu_3(F^2) = \frac{64}{P^2 \cdot \bar{n}_q^2} \left[3(\bar{F}^2) + \frac{1}{\bar{n}_q} \right] \dots \dots \dots (33.3)$$

$$\mu_4(F^2) = \frac{768}{P^2 \cdot \bar{n}_q^3} \left[(\bar{F}^2)^2 \right] + \frac{192(P+4)}{P^3 \cdot \bar{n}_q^3} \left[4(\bar{F}^2) + \frac{1}{\bar{n}_q} \right]. \quad (33.4).$$

When the two samples are drawn from the same group or population, or when there is no significant difference in variability we have $(\sigma_{pq} - \sigma_{pq}') = 0$ for all values of p , and we get

$$(\bar{F}^2)_0 = 0 \pm .67449 \cdot \frac{2}{\bar{n}_q} \sqrt{\frac{2}{P}} \dots \dots (33.5)$$

a formula which is analogous to equation (16.8).

If the variances for different samples are widely different, and it is not considered desirable to use $k_p^2 = \bar{\sigma}_p^2$, we may still have recourse to the present method, and develop appropriate

$$S[(m_{pq} - m_{pq'})^2] = (q-1)S[(m_{pq} - M_p)^2] = (q-1) \cdot q \cdot s_p^2 \dots (32.2)$$

where $q \cdot s_p^2 = S[(m_{pq} - M_p)^2]$ gives the co-group variance for the p th character, q being the total number of groups available. For any assigned character the mean value of $(m_{pq} - m_{pq'})^2$ for all possible comparisons is thus $2s_p^2$, since the total number of comparisons possible $= q(q-1)/2$. Writing the mean value of D^2 for all possible comparisons ($q(q-1)/2$ in number) as D_m^2 , we have therefore

$$D_m^2 = \frac{1}{P} S \left[\left(\frac{2s_p^2}{\sigma_p^2} \right) \right] - \frac{2}{\bar{n}} = [2(1+v^2) \cdot f^2] - \frac{2}{\bar{n}} \dots (32.3)$$

where $v^2 = \frac{1}{2N}$ approximately, and \bar{n} is the harmonic mean of all the different values of $n_{pq}, n_{pq'}$.

When \bar{n} and N are both large, i.e., $\frac{2}{\bar{n}}$ and $\frac{1}{2N}$ are both negligibly small, we shall have $D_m^2 = 2f^2$. We thus find that (excepting for a small correcting factor) the coefficient of familial differentiation f^2 is numerically equal to half the average value of the group divergence, the average being taken for all possible comparisons within the given collection of groups.

For an absolutely random collection, if we assume that the principle of equi-partition of variance is true, we should have

$$s_p^2 = \bar{\sigma}_p^2 = \frac{1}{2} \Sigma p^2 \dots \dots \dots (32.4).$$

In this case the two measures of divergence D^2 and D_2^2 become equal, while

$$D_3^2 = \frac{1}{2} D_2^2 = \frac{1}{2} D^2 \dots \dots \dots (32.5).$$

VIII. A COEFFICIENT OF DIVERGENCE IN VARIABILITY

31. We may also easily construct measures of divergence in variability. Let us choose $x_{pq} = \sigma_{pq}$, $x_{pq'} = \sigma_{pq'}$, and $k_p^2 = \bar{\sigma}_p^2$, where $\bar{\sigma}_p^2$ is a reliable constant value of the variance in the p th character which does not fluctuate from sample to sample. Then as a first approximation we may substitute

$$\Sigma x_{pq}^2 = \frac{\bar{\sigma}_p^2}{2n_{pq}}, \quad \Sigma x_{pq'}^2 = \frac{\bar{\sigma}_p^2}{2n_{pq'}} \dots \dots \dots (33.01)$$

$$v_p^2 = \frac{\bar{\sigma}_p^2}{(\sigma_{pq} - \sigma_{pq'})^2} \left(\frac{1}{2n_{pq}} + \frac{1}{2n_{pq'}} \right), \quad w_p^2 = 0 \dots \dots (33.02)$$

where $n_{pq}, n_{pq'}$ are the size of the two samples.

Using equation (13) we define a measure of divergence in variability by

$$F^2 = \frac{2}{P} S_p \left[\frac{(\sigma_{pq} - \sigma_{pq}')^2}{\sigma_p^2} \right] - \frac{2}{P} S_p \left[\left(\frac{1}{2n_{pq}} + \frac{1}{2n_{pq}'} \right) \right] \quad (33.0)$$

$$= \frac{2}{P} S_p \left[\frac{(\sigma_{pq} - \sigma_{pq}')^2}{\sigma_p^2} \right] - \frac{2}{\bar{n}_q} \dots \dots \dots (33.01)$$

when the size of the samples is constant for all characters, or a mean value \bar{n}_q as defined by equation (16.7) may be used without appreciable errors. The mean value of F^2 is easily found to be

$$\bar{F}^2 = \frac{1}{P} S_p \left[\frac{(\bar{\sigma}_{pq} - \bar{\sigma}_{pq}')^2}{\sigma_p^2} \right] \dots \dots \dots (33.1)$$

$$\begin{aligned} \mu_2(F^2) = \frac{16}{P^2} S_p \left[\frac{(\bar{\sigma}_{pq} - \bar{\sigma}_{pq}')^2}{\sigma_p^2} \left(\frac{1}{2n_{pq}} + \frac{1}{2n_{pq}'} \right) \right] \\ + \frac{8}{P^2} S_p \left[\left(\frac{1}{2n_{pq}} + \frac{1}{2n_{pq}'} \right)^2 \right] \dots \quad (33.2). \end{aligned}$$

We may use equation (16.7), and write

$$\frac{1}{\bar{n}_q} = \frac{1}{P} S_p \left[\left(\frac{1}{2n_{pq}} + \frac{1}{2n_{pq}'} \right) \right] \dots \dots \dots (16.71)$$

when the size of the samples is constant for all character, or when the fluctuation in the size of the sample can be neglected.

We then obtain

$$\mu_2(F^2) = \frac{8}{P \cdot \bar{n}_q} \left[2(\bar{F}^2) + \frac{1}{\bar{n}_q} \right] \dots \dots \dots (33.21)$$

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When the two samples are drawn from the same group or population, or when there is no significant difference in variability we have $(\sigma_{pq} - \sigma_{pq}') = 0$ for all values of p , and we get

$$(\bar{F}^2)_0 = 0 \pm .67449 \cdot \frac{2}{\bar{n}_q} \sqrt{\frac{2}{P}} \dots \dots (33.5)$$

a formula which is analogous to equation (16.8).

If the variances for different samples are widely different, and it is not considered desirable to use $k_p^2 = \bar{\sigma}_p^2$, we may still have recourse to the present method, and develop appropriate

formulae by substituting $k_p^2 = s_p^2$ in equations (13.0) and (12.1)–(12.4).

32. Coefficients of divergence in Skewness, and Kurtosis may also be constructed with the help of equation (13.0). For example for β_2 , we may use $x_{pq} = \beta_2(p, q)$, $x_{pq}' = \beta_2'(p, q')$, etc.

In the case of β_1 and β_2 (or other β -constants) a simpler alternative is open to us. It will be remembered that β_1 , β_2 and the other β -constants are pure numbers, so that the difficulty due to non-homogeneity of dimensions, discussed in paragraph 7, does not exist in their case. We may therefore use a coefficient of a simpler form, by putting $k_p^2 = 1$, and using

$$\frac{1}{P} S_p \left[\left\{ \beta_2(p, q) - \beta_2'(p, q') \right\}^2 \right]$$

with a small correcting term to allow for the bias introduced by the finite size of the samples.

I may also point out that the need for these coefficients will usually arise only when both C^2 and E^2 (defined by equation (5.1)) have failed to reveal the existence of divergence. In such cases it will also be usually sufficient to employ ordinary tests of statistical divergence between the corresponding β -constants for the two samples for each character separately. It must be remembered however that divergence in β -constants can be tested (or measured) only when the size of the samples is very large.

IX. CONCLUSION

33. It will be useful to have at this stage a brief resume of the important formulae.

A convenient measure of divergence in means is given by

$$D^2 = \frac{1}{P} S_p \left[\frac{(m_{pq} - m_{pq}')^2}{\sigma_p^2} \right] - \frac{1}{P} S_p \left[\left(\frac{1}{n_{pq}} + \frac{1}{n_{pq}'} \right) \right] \quad \dots (14.0)$$

and subsidiary equations (14.1)–(14.4). Modified values under restricted conditions are given in equations (16.0)–(16.8), while more general values are given in equations (27.1)–(27.8). Results of experimental sampling discussed in Section 5 are in satisfactory agreement with the theory.

A second measure of divergence is furnished by

$$D_2^2 = \frac{1}{P} S_p \left[\frac{(m_{pq} - m_{pq}')^2}{s_p^2} \right] - \frac{1}{P} S_p \left[\frac{\sigma_p^2}{s_p^2} \left(\frac{1}{n_{pq}} + \frac{1}{n_{pq}'} \right) \right] \quad \dots (26.0)$$

and equations (26.1)–(26.5).

An exactly analogous coefficient may be constructed by using the familial variance Σ_p^2 :—

$$D_3^2 = \frac{1}{P} S_p \left[\frac{(m_{pq} - m_{pq}')^2}{\Sigma_p^2} \right] - \frac{1}{P} S_p \left[\frac{\sigma_p^2}{\Sigma_p^2} \left(\frac{1}{n_{pq}} + \frac{1}{n_{pq}'} \right) \right] \quad \dots (35.0).$$

In certain ways D_3^2 would be an extremely convenient coefficient. Unfortunately, owing to lack of sufficient data in anthropology, it is not possible to obtain reliable values of Σ_p^2 for the whole human species. Neither is it possible, for the same reason, to obtain reliable values of s_p^2 for the human species. Fairly reliable values of the intra-group variance σ_p^2 may however be calculated in many cases, and the coefficient D^2 may therefore be used without difficulty.

I have given certain reasons for believing that D^2 would under certain conditions give practically the same results as D_2^2 or D_3^2 . When variation may be supposed to have taken place in an absolutely random manner within a given collection of groups, (say within the human species), a plausible hypothesis is that the total variance would tend to be distributed equally between the variation within the groups and the variation from group to group. In this case

$$\Sigma_p^2 = 2\sigma_p^2 = 2s_p^2 \quad \dots \quad (35.1)$$

so that

$$D_3^2 = \frac{1}{2} D^2 = \frac{1}{2} D_2^2 \quad \dots \quad (35.2).$$

When sufficient data become available it will be possible to test the above theory.

34. In case however no such simple relation (as predicted above) is found in future to subsist between D^2 , D_2^2 , and D_3^2 , the choice between these coefficients would have to be made by reference to the respective results obtained by their use.

The great simplicity of the equations for D^2 will, however, remain an important point in its favour; and other things being equal or nearly equal, this will be a sufficient reason for its general adoption.

Another convenient property of D^2 is that it may be easily converted into the Pearsonian Coefficient of Racial Likeness (C^2) by multiplication with suitable numerical factors. When n_{pq} , n_{pq}' are constant for all characters or the fluctuation in the size of the sample can be neglected it will be noticed that

$$C^2 = \left(\frac{n_q \cdot n_q'}{n_q + n_q'} \right) \cdot D^2 = \frac{2}{n_q} \cdot D^2 \quad \dots \quad (36.1).$$

When n_{pq} , n_{pq}' are not constant, and the size of the samples cannot be neglected, we still have

$$C^2 = \frac{1}{\bar{P}} S_p \left[\frac{(m_{pq} - m_{pq}')^2}{\sigma_p^2} \left(\frac{1}{n_{pq}} + \frac{1}{n_{pq}'} \right) \right] - 1 \quad \dots \quad (36.2)$$

in which the terms $(m_{pq} - m_{pq}')^2 / \sigma_p^2$ will have already been calculated for the computation of D^2 .

The use of D_2^2 would appear to be indicated where a close study of the differentiation *within* a given family is required. It has the great advantage that, on the average of all possible

formulae by substituting $k_p^2 = s_p^2$ in equations (13.0) and (12.1)–(12.4).

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comparisons within a collection, it gives the same "weight" to all characters, i.e., does not discriminate against any particular set of characters. A consequential disadvantage is of course that the average value of D_2^2 (for all possible comparisons within a collection) remains identically same for every collection, so that a comparison of coefficients from different collections (or families) may become extremely misleading.

A different type of the coefficient of divergence in means is given by

$$D_4^2 = \frac{1}{P} S_p \left[\frac{(m_{pq} - m_{pq}')}{M_p^2} \right] - \frac{1}{P} S_p \left[\frac{\sigma_p^2}{M_p^2} \left(\frac{1}{n_{pq}} + \frac{1}{n_{pq}'} \right) \right] \dots (28.1)$$

and equations (28.2) – (28.5).

35. We have also proposed to use the ratio $\left(\frac{s_p^2}{\sigma_p^2} \right)$ for measuring the amount of differentiation existing within a given collection of groups, and we have defined a coefficient of familial differentiation by

$$f^2 = \frac{1}{P} S_p \left[\left(\frac{s_p^2}{\sigma_p^2} \right) \left(1 - \frac{1}{2N_p} + \frac{1}{4N_p^2} - \frac{1}{8N_p^3} \right) \right] \dots (31.1)$$

and equations (31.0) – (31.8), where N_p is the number of groups included in the comparison. This coefficient is very simply connected with the average value D_m^2 of the first coefficient of divergence (the average being taken for all possible comparisons within the given collection of groups).

$$D_m^2 = 2(1 + \gamma^2) \cdot f^2 - \frac{2}{\bar{n}_q} \dots (32.8)$$

$(1 + \gamma^2)$ being a numerical factor which approaches the limiting value 1 as N increases.

38. Apart from the Pearsonian Coefficient of Racial Likeness (which furnishes the standard test for the detection of divergence in means), we have obtained several new tests of divergence. The most important of which is a coefficient for detecting divergence in variabilities, which may be used in practice without difficulty.

$$E^2 = \frac{2}{P} S_p \left[\left(\frac{n_{pq} \cdot n_{pq}'}{n_{pq} + n_{pq}'} \right) \frac{(\sigma_{pq} - \sigma_{pq'})^2}{\sigma_p^2} \right] - 1 \dots (5.1).$$

A convenient measure of divergence in variabilities is given by

$$F^2 = \frac{2}{P} S_p \left[\frac{(\sigma_{pq} - \sigma_{pq'})^2}{\sigma_p^2} \right] - \frac{2}{P} S_p \left[\left(\frac{1}{2n_{pq}} + \frac{1}{2n_{pq}'} \right) \right] \dots (33.0)$$

and subsidiary equations (33.1) – (33.4).

It will be noticed that when n_{pq} and n_{pq}' are constant for all values of p , or the fluctuation in the size of the sample is negligibly small,

$$\therefore F^2 = \left(\frac{n_q \cdot n_q'}{n_q + n_q'} \right) \cdot F^2 = \frac{2}{\bar{n}_q} \cdot F^2 \quad \dots \quad (38.0)$$

a result which can be compared with that given in equation (36.1).

36. I wish to emphasize here the distinction between tests and measures of divergence. It is true that the Pearsonian Coefficient of Racial Likeness (which is properly speaking a test of divergence) has been extensively used with considerable success as a measure of divergence in craniometry. This point will be discussed later, but a little consideration will show that such use can be considered legitimate only under restricted conditions.

Consider two samples drawn from the *same* group or population. In this case we must have

$$C^2 = 0 \pm .67449 \sqrt{\frac{2}{P}} \quad \dots \quad (39.0).$$

In using the above equation to detect the existence of divergence we adopt the following procedure:—

(i) We assume that the two samples under consideration are drawn from the *same* group or population; *i.e.* $(\bar{m}_{pq} - \bar{m}_{pq}') = 0$ for all characters. (Hypothesis (A)).

(ii) Then by comparing the observed value of C^2 with equation (39.0) we now determine the probability of hypothesis (A) being true.

If C^2 is not significantly different from zero, we are in a position to assert that, judged by the given data, the two groups (from which the two samples were drawn) are probably not different. On the other hand if C^2 is significantly greater than zero, we feel justified in asserting that the two groups are differentiated from each other.

The point to be noted here is that the magnitude of C^2 determines the degree of certainty with which the *existence* of divergence can be asserted, but does not necessarily supply any information regarding the *magnitude* of such divergence.

So long as the samples are drawn from the same group or population, C^2 will be approximately equal to zero whatever be the value of n or n' . When the two samples are however drawn from two different groups or populations, $(\bar{m}_{pq} - \bar{m}_{pq}')$ would not vanish generally, and \bar{D}^2 would attain some constant finite value for the same two differing groups. The observed values of C^2 would in such cases depend upon both

comparisons within a collection, it gives the same "weight" to all characters, i.e., does not discriminate against any particular set of characters. A consequential disadvantage is of course that the average value of D_2^2 (for all possible comparisons within a collection) remains identically same for every collection, so that a comparison of coefficients from different collections (or families) may become extremely misleading.

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$$C^2 = 0 \pm .67449 \sqrt{\frac{2}{P}} \quad \dots \quad (39.0).$$

In using the above equation to detect the existence of divergence we adopt the following procedure:—

(i) We assume that the two samples under consideration are drawn from the *same* group or population; i.e. $(\bar{m}_{pq} - \bar{m}_{pq}') = 0$ for all characters. (Hypothesis (A)).

(ii) Then by comparing the observed value of C^2 with equation (39.0) we now determine the probability of hypothesis (A) being true.

If C^2 is not significantly different from zero, we are in a position to assert that, judged by the given data, the two groups (from which the two samples were drawn) are probably not different. On the other hand if C^2 is significantly greater than zero, we feel justified in asserting that the two groups are differentiated from each other.

The point to be noted here is that the magnitude of C^2 determines the degree of certainty with which the *existence* of divergence can be asserted, but does not necessarily supply any information regarding the *magnitude* of such divergence.

So long as the samples are drawn from the same group or population, C^2 will be approximately equal to zero whatever be the value of n or n' . When the two samples are however drawn from two different groups or populations, $(\bar{m}_{pq} - \bar{m}_{pq}')$ would not vanish generally, and \bar{D}^2 would attain some constant finite value for the same two differing groups. The observed values of C^2 would in such cases depend upon both

(i) the magnitude of \bar{D}^2 , as well as on

(ii) the factor $\left(\frac{n \cdot n'}{n + n'}\right)$ determined by the size of the samples.

Provided n, n' are fairly large, observed values of D^2 would differ from the mean value (\bar{D}^2) by quantities of the order of errors of random sampling, i.e. by quantities which will be in usual practice negligibly small: so that observed values of D^2 would not differ significantly from (\bar{D}^2). Thus the first factor D^2 would remain sensibly constant for samples drawn from the same two differing populations. The factor $\left(\frac{n \cdot n'}{n + n'}\right)$ would how-

ever vary directly with the size of the samples, so that observed values of C^2 also would vary with the size of samples, and would not remain sensibly constant for the same two differing populations.

If the size of the samples n, n' are very large we may easily obtain very large values of C^2 even when the samples are drawn from two groups which are closely associated. On the other hand when n, n' are small C^2 may assume very small values even for widely divergent populations.

This difficulty (and the need for making allowances for the size of the samples) was recognised long ago by G. H. Morant (7, p. 12) who wrote:—

“Given two random samples each of ten individuals drawn from the same homogeneous population, the Coefficient of Racial Likeness . . . deduced from the mean character of the two samples will not differ significantly from zero, and if two samples each of a hundred individuals are drawn from the same population then their coefficients will also be of the same order.¹ But if two random samples each of ten individuals are drawn from two different populations and then two samples each of a hundred individuals are drawn from the same differing populations it will be found that the coefficient between the first pair will be very distinctly less than that between the two samples of hundred individuals each. The difference in this case is merely an expression of the rather obvious fact that it is more probable that the small samples were in reality drawn from the same population than that the larger samples were. It is for this reason that the coefficients of Racial Likeness may not be compared directly by estimating differences in terms of probable errors only as may be done when dealing with the majority of statistical constants in use. Reference has to be made constantly to the number of crania in the several racial series used.

¹ i.e., will be of the order of zero (P.C.M.).

..... In practice direct comparison may be made between the numerical values of the coefficients in the cases when ":

(i) "All the means are based on the same or approximately the same number of crania; and"

(ii) "When one series of racial means is compared with a number of others, the latter being based on the same or approximately the same numbers of crania which may differ from the first series."

It will be seen that Dr. Morant's two conditions may be combined into the single statement that the factor $\left(\frac{n \cdot n'}{n + n'}\right)$

must remain sensibly constant during the same series of comparisons. Enforcement of this restriction would therefore (apart from errors of random sampling) inevitably throw the comparison to the factor D^2 .

It is clear from the above discussion that the use of C^2 as a measure of divergence would be strictly possible only under either of the following two conditions:—

(a) when the samples are drawn from the same population, i.e., when C^2 is sensibly zero, or

(b) when the size of the samples, and hence the factor $\left(\frac{n \cdot n'}{n + n'}\right)$ remains constant for all samples.

37. Prof. Pearson (12, 105-117) has shown however in a review of about 750 computed values of C^2 that in actual practice the Coefficient of Racial Likeness has been found to be an extremely useful tool in craniometric researches. For purposes of comparison I therefore obtained by direct calculation approximate values of D^2 corresponding to nearly every one of the 750 values of C^2 reviewed by Prof. Pearson. My results will be fully discussed in Part II of the present paper, but I may anticipate a little and state here, that I believe I have succeeded in tracing the empirical success of the use of C^2 as a measure of divergence in craniometric work in most cases to either or both of the conditions explained above. A very large number of the coefficients (reviewed by Prof. Pearson) referred to closely associated groups for which both C^2 and D^2 gave coefficients of low magnitudes. Further, owing to paucity of material the number of skulls in each sample was also usually small, so that the size

factor $\left(\frac{n \cdot n'}{n + n'}\right)$ did not fluctuate very widely. In fact I could detect only a comparatively small number of coefficients for which C^2 and D^2 gave significantly different results.

Conditions are however widely different for measurements on the living; the size of the sample is more variable, and much

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two anthropometric papers, one on the "Chinese Head" (6) and the other on "Race Mixture in Bengal" (5). The results obtained were I believe fairly encouraging.

In the present paper I have obtained coefficients which are theoretically¹ preferable to the one used by me previously, and I have also investigated their statistical distributions. I have made an empirical study of five of the coefficients (D^2 , D_2^2 , D_4^2 , E^2 , and F^2 , defined by equations (14.0), (26.0), (28.1), (5.1) and (33.0) respectively) using a long series of Swedish measurements on the living (4). The results will be given in a sequel to the present paper,² but I may mention in anticipation that they support the use of D^2 for comparative purposes.

ADDENDUM

In June 1927, I showed a first draft of the present paper to Prof. Karl Pearson, and discussed with him the difficulties connected with the fluctuating size of samples $\left(\frac{n \cdot n'}{n + n'}\right)$. At that time he was unable to accept my views, and he pointed out certain theoretical objections to my results. I then worked out the mathematical portion with greater rigour, and communicated the present paper to the Indian Science Congress in December 1928. About the same time Prof. Pearson himself proposed (12a)³ making allowances for the size factor $\left(\frac{n \cdot n'}{n + n'}\right)$ by reducing all coefficients of Racial Likeness to a standard population. When the size of the sample is constant for all characters, the result of such reduction would be to make the

¹ I would point out that the theoretical limitations given by the set of assumptions (A-1)-(A-7) under which the present formulae have been worked out are practically the same as those subsisting for the Pearsonian Coefficient C^2 . These restrictions have been fully discussed by Prof. Pearson (12). The most important of the restrictions which requires further consideration is the neglecting of the correlation between different characters.

² The anthropological portion of the work on the Swedish material has been published in the *Biometrika*, Vol. XXII, 1930, 94-108 ("A Statistical Study of certain Anthropometric Measurements from Sweden").

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